

A publication of the
**National Wildfire
Coordinating Group**



Prescribed Fire Plan

PMS 484-1

JULY 2017

Prescribed Fire Plan

July 2017
PMS 484-1

The *Prescribed Fire Plan* is supplemental to the *Interagency Prescribed Fire Planning and Implementation Guide*, PMS 484. The plan is the site-specific legal implementation document that provides the agency administrator the information needed to approve the prescribed fire plan, and the prescribed fire burn boss the information needed to implement the prescribed fire plan.

The *Interagency Prescribed Fire Planning and Implementation Procedures Guide*, PMS 484, establishes national interagency standards for the planning and implementation of prescribed fire. The guide is located at: <https://www.nwcg.gov/publications/484>.

Prescribed Fire Name: Vallecito Piedra Integrated Vegetation Management Plan

Ignition Unit Name: VP Unit 1

Element 1: Signature Page

PRESCRIBED FIRE PLAN

ADMINISTRATIVE UNIT NAME(S): Vallecito Piedra Integrated Vegetation Management Project

PRESCRIBED FIRE NAME:

Prescribed Fire Unit (Ignition Unit): VP Unit 1

PREPARED BY:

Name (print): Hon Schlapfer Qualification/Currency: Yes

Signature: _____ Date: _____

TECHNICAL REVIEW BY:

Name (print): Fred Ellis Qualification/Currency: RXB2 05/05/2022

Signature: /s/ Fred Ellis Date: 08/01/2018

COMPLEXITY RATING: Moderate

MINIMUM BURN BOSS QUALIFICATION: RXB2

APPROVED BY:

Name – Agency Administrator (print): _____

Signature – Agency Administrator: _____ Date: _____

Prescribed Fire Name: Vallecito Piedra Integrated Vegetation Management Plan

Ignition Unit Name: VP Unit 1

Recertification

Name – Agency Administrator (print): _____

Signature – Agency Administrator: _____ Date: _____

Recertification

Name – Agency Administrator (print): _____

Signature – Agency Administrator: _____ Date: _____

Recertification

Name – Agency Administrator (print): _____

Signature – Agency Administrator: _____ Date: _____

Element 2A: Agency Administrator Ignition Authorization

Instructions: The Agency Administrator Ignition Authorization must be completed before a prescribed fire can be implemented. If ignition of the prescribed fire is not initiated prior to expiration date determined by the agency administrator, a new authorization will be required.

Prior to signature the agency administrator should discuss the following key items with the fire management officer (FMO) or burn boss. Attach any additional instructions or discussion documentation (optional) to this document.

Key Discussion Items

A. Has anything changed since the Prescribed Fire Plan was approved or revalidated? <i>Such as drought or other climate indicators of increased risk, insect activity, new subdivisions/structures, smoke requirements, Complexity Analysis Rating.</i>
B. Have compliance requirements and pre-burn considerations been completed? <i>Such as preparation work, NEPA mitigation requirements, cultural, threatened and endangered species, smoke permits, state burn permits/authorizations.</i>
C. Can all of the elements and conditions specified in Prescribed Fire Plan be met? <i>Such as weather, scheduling, smoke management conditions, suitable prescription window, correct season, staffing and organization, safety considerations, etc.</i>
D. Are processes in place to ensure all internal and external notifications and media releases will be completed?
E. Have key agency staffs been fully briefed about the implementation of this prescribed fire?
F. Are there circumstances that could affect the successful implementation of the plan? <i>Such as preparedness level restrictions, resource availability, other prescribed fire or wildfire activity</i>
G. Have you communicated your expectations to the Burn Boss and FMO regarding if and when you are to be notified that contingency actions are being taken?
H. Have you communicated your expectations to the Burn Boss and FMO regarding decisions to declare the prescribed fire a wildfire?

Implementation Recommended by:

FMO or Prescribed Fire Burn Boss Signature: _____ Date: _____

I am authorizing ignition of this prescribed fire between the dates of _____ and _____. It is my expectation that the project will be implemented within this time frame and as discussed and documented and attached to this plan. If the conditions we discussed change during this time frame, it is my expectation you will brief me on the circumstances and an updated authorization will be negotiated if necessary.

Additional Instructions or Discussion Documentation attached (Optional): Yes ☐ No ☐

Ignition Authorized by:

Agency Administrator Signature and Title: _____ Date: _____

Element 2B: Prescribed Fire Go/No-Go Checklist

Preliminary Questions	Circle YES or NO
A. Have conditions in or adjacent to the ignition unit changed, (for example: drought conditions or fuel loadings), which were not considered in the prescription development? If <u>NO</u> proceed with the Go/NO-GO Checklist below, if <u>YES</u> go to item B.	YES NO
B. Has the prescribed fire plan been reviewed and an amendment been approved; or has it been determined that no amendment is necessary? If <u>YES</u> , proceed with checklist below. If <u>NO</u> , STOP: Implementation is not allowed. An amendment is needed.	YES NO
GO/NO-GO Checklist	Circle YES or NO
Have ALL permits and clearances been obtained?	YES NO
Have ALL the required notifications been made?	YES NO
Have ALL the pre-burn considerations and preparation work identified in the prescribed fire plan been completed or addressed and checked?	YES NO
Have ALL required current and projected fire weather forecast been obtained and are they favorable?	YES NO
Are ALL prescription parameters met?	YES NO
Are ALL smoke management specifications met?	YES NO
Are ALL planned operations personnel and equipment on-site, available and operational?	YES NO
Has the availability of contingency resources applicable to today's implementation been checked and are they available?	YES NO
Have ALL personnel been briefed on the project objectives, their assignment, safety hazards, escape routes, and safety zones?	YES NO
If all the questions were answered " <u>YES</u> " proceed with a test fire. Document the current conditions, location and results. If any questions were answered " <u>NO</u> ", DO NOT proceed with the test fire: Implementation is not allowed.	
After evaluating the test fire, in your judgment can the prescribed fire be carried out according to the prescribed fire plan and will it meet the planned objective? Circle: YES or NO	

Burn Boss Signature: _____ Date: _____

Element 3: Complexity Analysis Summary and Final Complexity

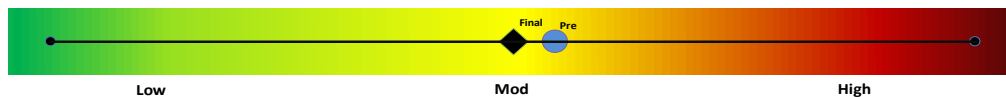
**NWCG Prescribed Fire Summary and Final Complexity Worksheet, PMS 424-1**

This worksheet is supplemental to the *Prescribed Fire Complexity Rating System Guide*, PMS 424. It is designed to enable effective risk management. The *Interagency Prescribed Fire Planning and Implementation Procedures Guide*, PMS 484, provides further explanation. This becomes Element 3 of the Prescribed Fire Plan.

Type the Prescribed Fire Plan name here	Quantity	Significance
Values	On-Site	Few High
	Off-Site	Multiple High
	Public/Political Interest	Multiple High

Element	Preliminary Risk	Post-Plan Risk	Technical Difficulty	Calculated Rating
Safety	High	Mod	Mod	Mod
Fire Behavior	Mod	Mod	Mod	Mod
Resistance to Containment	Mod	Mod	Mod	Mod
Ignition Procedures and Methods	Mod	Mod	Mod	Mod
Prescribed Fire Duration	Mod	Mod	Mod	Mod
Smoke Management	Mod	Mod	Mod	Mod
Number and Dependence of Activities	Mod	Mod	Mod	Mod
Management Organization	Mod	Mod	Mod	Mod
Treatment/Resource Objectives	Mod	Mod	Low	Mod
Constraints	Mod	Mod	Low	Mod
Project Logistics	Mod	Mod	Low	Mod

Calculated Summary Prescribed Fire Plan Complexity



Final Complexity Determination	Final Complexity Determination Rationale
Mod	This project rates as moderate complexity due to the variable terrain and, proximity to private land and the Town of Bayfield and HWY 160. Fuels include Gambel oak, ponderosa pine. Road access to all units is good, and ATV's can access all parts of this unit. The risk of escape is moderate; however the potential consequences are high. This burn unit is adjacent to private land and there are many residences in close proximity to the burn units. This risk will be mitigated by having sufficient qualified resources on scene, careful monitoring of weather, fire behavior and fuels conditions and coordination between firing and holding crews
Signatures	<div>Rx Burn Plan Preparer's Name: _____ X _____ Date: _____ Preparer</div> <div>Technical Reviewer's Name: _____ X _____ Date: _____ Technical Reviewer</div> <div>Agency Administrator's Name: _____ X _____ Date: _____ Agency Administrator</div>

Fill out Elements 4 through 21 based on the guidance provided in the *Interagency Prescribed Fire Planning and Implementation Procedures Guide*, PMS 484.

Management Summary

We are proposing to utilize a combination of mechanical vegetation thinning and harvest treatments, prescribed fire, and managed natural fire on approximately 80,334 acres of National Forest land. The project is expected to be implemented in phases over several years, depending on available budgets, contractor schedules, weather conditions, and other unpredictable factors. Activities within smaller treatment units would generally be accomplished within one or two operating seasons

We prepared the environmental assessment (EA) to determine whether implementation of mechanical thinning, hand thinning and prescribed fire may significantly affect the quality of the human environment and thereby require the preparation of an environmental impact statement. By preparing the EA, we are fulfilling agency policy and direction to comply with the National Environmental Policy Act (NEPA).

Proposed Project Location

The 80,334 acre project area is located within La Plata County and Archuleta Counties, Colorado. It is located in the beaver meadows, grassy mountain and middle mountain areas. It is bordered to the south by US Highway 160, by the Weminuche Wilderness to the north, by the Columbine/Pagosa district boundary to the east, and by county road 501 to the west.

Topography of the project area is diverse and is divided by numerous drainages, steep rocky cliffs, relatively flat benches, open meadows and rocky south-facing slopes. Elevations of the project area range from about 7,200 feet to 11,600 feet. Higher elevations are predominately spruce-fir, aspen Ponderosa pine and mixed conifer are the dominant tree species in the project area, with Gambel oak the dominant shrub in the understory. There is also piñon/juniper woodland in the lower elevations. Mid elevations include ponderosa pine with a mosaic of mixed brush in the understory. Douglas fir and white fir and spruce stands can be found on the north and south facing slopes and in higher elevations. Large aspen stands are scattered throughout. The brush is mainly Gambel oak but also includes a mix of service berry, mountain mahogany and choke cherry higher elevations transition into more Douglas fir, White fir and Spruce.

Legal description: Townships 35-36-37 North, Ranges 5-6-7 West.

COMPLEXITY RATING SUMMARY	
	OVERALL RATING
RISK	MODERATE
POTENTIAL CONSEQUENCES	MODERATE
TECHNICAL DIFFICULTY	MODERATE
SUMMARY COMPLEXITY DETERMINATION	MODERATE
Rationale	
<p>This project rates as moderate complexity due to the variable terrain, aerial ignition component, and proximity to private land, infrastructure, and the Town of Bayfield. Fuels include gambel oak, ponderosa pine, and mixed conifer on the northern boundary and higher elevations. Pargin prescribed fire implemented 2016 borders to south side of HWY 160. VP unit 1 has 95% Road access ATV/UTV can access all parts of all unit. The risk of escape is moderate; however the potential consequences are high. The North Western boundary borders private property. This risk will be mitigated by having sufficient qualified resources on scene, careful monitoring of weather, fire behavior and fuels conditions and coordination between firing and holding crews.</p>	

Element 4: Description of Prescribed Fire Area

A. Physical Description

1. **Location:** VP Unit 1 is located in the SW corner of the VPIVMP (Vallecito Piedra Integrated Vegetation Management Plan) project area. Bordered to the east by the Columbine/Pagosa district boundary, western boundary is the Wickenson and Schafer mountain area. Southern boundary consist of the lower first notch area and HWY 160, Norther boundary is the upper beaver slope and the Piedra Special Management area.
2. **Size:** VP Unit 1 - 6,291 Acres – Reference Map
3. **Topography:** Topography of the VP Unit 1 mostly south facing aspect with multiple drainages, some steep rocky cliffs, relatively flat benches, open meadows. Elevations of this unit range from 7,896 feet to 9,385 feet. (Reference Map)
4. **Project area:** 80,334 – Reference Map

5. Ignition units: VP Unit 1

B. Vegetation/Fuels Description:

On-Site Fuels Data				Adjacent Fuels Data		
FBPS Fuel Model(s)		TL8	TU5	FBPS Fuel Model(s)		TL5
NFDRS Fuel Model(s)		C	H	NFDRS Fuel Model(s)		F
Fire Regime(s)		1	2	Fire Regime(s)		4
Fire Condition Class(es)		3	2	Fire Condition Class(es)		2
Percent of Area		65	30	Percent of Area		5
Fuel Loading	1 hour tlf	.08	.17	General Description of Adjacent Fuels		
	10 hour tlf	.24	2.14	Mid elevation vegetation is ponderosa pine with a brush understory. The brush is mainly Gambel oak but also includes a mix of service berry, mountain mahogany and choke cherry. Higher elevations include ponderosa pine with a mosaic of mixed brush in the understory. Douglas fir and white fir can be found on the northern boundary of the unit. Pockets of aspen (1/10 th acre to 3 acre in size) are scattered throughout. In the lower elevations there is a mixed brush component on north aspects and in drainage bottoms.		
	100 hour tlf	0.0	0.0			
	1000 hour tlf					
	Litter depth	3.44	1.23			
	Duff depth	3.13	2.28			
	Live woody					
	Live herbaceous					
	Total fuel loading	6.88	7.83			

Comments
<p>The Predominant vegetation for all burn units consists of approximately 30% Gambel oak, 65% ponderosa pine, and 5% mixed conifer on high elevation northern boundary. The fuel complexes are fairly homogenous with a small “intermix” zone thru the transition. The ponderosa pine is predominantly on the south facing aspects at the lower elevations, the Gambel oak is interspersed from the pine type transitioning to “pure” oak stands in open areas. The mixed conifer fuel complex is found on only a few of the higher ridges and only on the northern boundaries. There are numerous patches of bare rock and mineral soil on predominate ridgelines between the units. There are also large open meadows and cattle ponds located within the unit.</p> <p>VP Unit 1 is located in the SW corner of the VPIVMP (Vallecito Piedra Integrated Vegetation Management Plan) project area. Bordered to the east by the Columbine/Pagaosa district boundary, western boundary is the Wickenson and Schafer mountain area. Southern boundary consist of the lower first notch area and HWY 160, Norther boundary is the upper beaver slope and the Piedra Special Management area. First Notch area received prescribed fire treatments in the fall of 2009 for 600 acres. This unit has never been logged nor has it had any thinning or</p>

fuels reduction treatments due to lack of access. Various small fires have occurred ranging in size from 0.1 to 5.0 acres. Grazing has occurred in this unit and many larger open grassy meadows and cattle ponds exist within the unit.

C. Description of Unique Features, Natural Resources, Values:

- Powerlines (KV) border the burn units on the lower western edge.
- Wooden fences bordering private property Northwest corner of the unit.
- Numerous fences run within the unit utilized for cattle allotments.
- Highway 160 runs along runs close to the southern unit border.

D. Maps - Attach in Appendix A

1. Vicinity (Required)
2. Project/Ignition Unit(s) (Required)
3. Values: (Required)
4. Significant or Sensitive Features (Optional): ☒ Included ☐ Not Included
5. Fuels or Fuel Model(s)(Optional): ☐ Included ☒ Not Included
6. Smoke Impact Area (Optional): ☒ Included ☐ Not Included

Element 5: Objectives

1. Resource Objectives
<p>Increase the probability of natural ponderosa pine regeneration by the release natural minerals and nutrients back into the soil. Additional benefits would include an increase in habitat diversity for many native wildlife species, including big game, through the regeneration of Gambel oak.</p> <ul style="list-style-type: none"> • Top kill 30 to 80% of the Gambel oak stems less than 6 inches. • Raise average canopy base height 5 to 10 feet in the Ponderosa-mixed conifer stands. • Improve habitat for big game winter range and management indicator species associated with ponderosa pine ecosystems.
2. Prescribed Fire Objectives
<p>Lower the probability of a running stand-replacing crown fire, thus secondarily reducing the risk to life and property, and natural resources, and decreasing financial cost of Wildfire.</p> <p>Reduce surface fuels by the following amounts:</p> <ul style="list-style-type: none"> • 1 hour fuels (less than 0.25" dia.) 30 to 70% • 10 hour fuels (0.25 to 1.0" dia.) 30 to 70% • 100 hour fuels (1.0 to 3.0" dia.) 10 to 50%

Element 6: Funding

Funding Source(s) NFHF1318							
Phase	Fuels	Wildlife	Range	Recreation	Timber	Other	Subtotal
Planning & Clearances							
Burn Plan Preparation							
Site & Line Preparation							
Ignition & Holding							
Mop-up & Patrol							
Subtotal							
Grand Total							

Element 7: Prescription

A. Environmental Prescription:

The BehavePlus 5.0.5 model was used to determine prescription parameters. All fuel models were run to reflect both high end optimal, and low end parameters of the prescription. The prescribed fire project area is divided between fuel models TU5, TL5, and TL8.

Fuel Models:	Low Fire Intensity	High Fire Intensity
Temperature	35	85
Relative Humidity (%)	45	10
Mid Flame wind speed(mph)*	.6	6.6 TL5, TL8---8.8 TU5
20 ft. Wind Speed(mph)	2	22
1-hr fuel moisture (%)	14	5
10-hr fuel moisture (%)	16	6
100-hr fuel moisture (%)	18	8
1000-hr fuel moisture (%)	NA	NA
Live herbaceous moisture (%)	150	80
Live woody moisture (%)	150	100
Wind Direction	E,W,S	E,W,S
Smoke Dispersion** (minimum ventilation)	Fair	Fair

* Wind adjustment factor of .3 for Fuel Models - TL5, TL8

* Wind adjustment factor of .4 for Fuels Model - TU5

** Dispersion index may be "Fair" if waiver is in place.

Fuel Model TL5

High Load Conifer Litter

PRESCRIBED WEATHER CONDITIONS							
VARIABLE	LOW	OPTIMAL	HIGH	VARIABLE	LOW	OPTIMAL	HIGH
Temperature	35	70	85	Mid Flame Wind Speed	1	4	6.6
Relative Humidity	45	20	10	20’ Wind Speed	4	12	22
Fine Dead FM	14	8	5	20’ Gust Limit	40	35	30
Smoke Vector (Wind Dir)-South, East, West				Wind Adjustment Factor (WAF): .3			
Smoke Avoidance (Wind Dir)- See Attached smoke permit				WAF Rational- .3 Chosen due to canopy structure and past experiences burning in this fuel type.			
PRESCRIBED MOISTURE CONTENT OF FUELS							
SIZE CLASS /TYPE	LOW	OPTIMAL	HIGH	SIZE CLASS/TYPE	LOW	OPTIMAL	HIGH
1 Hour Dead	14	8	5	Live Woody	150	125	80
10 Hour Dead	16	8	6	Live Herbaceous	150	125	100
100 Hour Dead	18	10	8	Upper Duff	n/a	n/a	n/a
1000 Hour Dead	n/a	n/a	n/a	Lower Duff	n/a	n/a	n/a
PRESCRIBED IGNITION AND FIRE BEHAVIOR							
Time of Ignition		March, April, May, June-August, September, October, November					
Ignition Method		Hand Ignition Black Line – Aerial ping pong or Helitorch					
Acceptable Firing Techniques/patterns		Strip Head, Flanking, Backing, Spot Ignition					
Fire Behavior Fuel Model Selection Rational:TL5				Fire Behavior Parameters:			
Primary carrier of fire in TL5 is high load conifer litter; light slash or mortality fuel				Flame lengths between 1 to 6 feet. Rates of spread 1 to 11 chains/hr.			
	LOW	OPTIMAL	HIGH		LOW	OPTIMAL	HIGH
Spot Distance-Miles	.2	.4	.6	Prob. of Ignition	15	60	75
Flame Length-Feet	0-1	1-2	2-5	Rate of Spread-Chains/HR	0-2	2-7	7-11

Flame lengths will vary during the firing operation and may for short periods of time approach upper prescription parameters dependent upon firing techniques, weather conditions, fuel jackpots and topography. The firing boss will need to alter the firing techniques to maintain prescription parameters and may have to stop ignition operations until more favorable conditions exist.

Wind gust will increase Rate of spread to 11.3 chains per hour and Flame length to 3.3 feet

Wind Gust Definition- NWS

Is a sudden, brief increase in speed of the wind. According to U.S. weather observing practice, gusts are reported when the peak wind speed reaches at least 16 knots and the variation in wind speed between the peaks and lulls is at least 9 knots. The duration of a gust is usually less than 20 seconds.

Fuel Model TL5

FIRE BEHAVIOR MATRIX (Flame Length)

BehavePlus 5.0.5 model was used to determine outputs

1-HOUR	20' Wind Speed/Mid Flame MPH (calculated with prescription WAF)							
FUEL	20ft- 0-3	4-6	7-9	10-12	13-15	16-18	19-21	22-25
MOISTURE	MFWS-0-1	1.0-2.0	2.0-3.0	3.0-4.0	4.0-4.5	4.5-5.5	5.5-6.5	6.5-7.5
5	1.8	1.9	2.1	2.3	2.5	2.7	2.9	3.1
6	1.7	1.8	2.0	2.2	2.4	2.6	2.7	3.0
7	1.6	1.7	1.9	2.1	2.3	2.4	2.6	2.8
8	1.5	1.7	1.8	2.0	2.2	2.3	2.5	2.7
9	1.5	1.6	1.8	1.9	2.1	2.3	2.4	2.6
10	1.4	1.6	1.7	1.7	2.0	2.2	2.4	2.6
11	1.4	1.5	1.7	1.8	2.0	2.1	2.3	2.5
12	1.4	1.5	1.6	1.8	2.0	2.1	2.3	2.4
13	1.3	1.5	1.6	1.8	1.9	2.1	2.2	2.4
14	1.3	1.4	1.6	1.7	1.9	2.0	2.2	2.4
15	1.3	1.4	1.6	1.7	1.8	2.0	2.1	2.3
16	1.3	1.4	1.5	1.7	1.8	1.9	2.1	2.3
17	1.2	1.3	1.5	1.6	1.7	1.9	2.0	2.2

FIRE BEHAVIOR MATRIX (Rate of Spread)

BehavePlus 5.0.5 model was used to determine outputs

1-HOUR	20' Wind Speed/Mid Flame MPH (calculated with prescription WAF)							
FUEL	20ft- 0-3	4-6	7-9	10-12	13-15	16-18	19-21	22-25
MOISTURE	MFWS-0-1	1.0-2.0	2.0-3.0	3.0-4.0	4.0-4.5	4.5-5.5	5.5-6.5	6.5-7.5
5	2.9	3.6	4.4	5.3	6.3	7.4	8.6	10.3
6	2.7	3.3	4.0	4.9	5.8	6.9	8.0	9.5
7	2.5	3.1	3.8	4.6	5.4	6.4	7.4	8.9
8	2.4	2.9	3.5	4.3	5.1	6.0	7.0	8.4
9	2.2	2.7	3.4	4.1	4.9	5.7	6.6	7.9
10	2.1	2.6	3.2	3.9	4.6	5.5	6.3	7.6
11	2.1	2.5	3.1	3.7	4.5	5.2	6.1	7.3
12	2.0	2.4	3.0	3.6	4.3	5.1	5.9	7.0
13	1.9	2.3	2.9	3.5	4.1	4.9	5.7	6.8
14	1.8	2.3	2.8	3.4	4.0	4.7	5.5	6.5
15	1.8	2.2	2.7	3.2	3.9	4.5	5.3	6.3
16	1.7	2.1	2.6	3.1	3.7	4.4	5.1	6.1
17	1.6	2.0	2.5	3.0	3.6	4.2	4.9	5.8

Fuel Model TL8

Ponerosa Pine-Long Needle Litter

PRESCRIBED WEATHER CONDITIONS							
VARIABLE	LOW	OPTIMAL	HIGH	VARIABLE	LOW	OPTIMAL	HIGH
Temperature	35	70	85	Mid Flame Wind Speed	1.6	4.8	6.6
Relative Humidity	45	20	15	20’ Wind Speed	4	12	22
Fine Dead FM	14	7	5	20’ Gust Limit	40	35	30
Smoke Vector (Wind Dir)- South, East, West				Wind Adjustment Factor (WAF): .3			
Smoke Avoidance (Wind Dir)- See Attached smoke permit				WAF Rational-.3 Chosen due to canopy structure and past experiences burning in this fuel type.			
PRESCRIBED MOISTURE CONTENT OF FUELS							
SIZE CLASS /TYPE	LOW	OPTIMAL	HIGH	SIZE CLASS/TYPE	LOW	OPTIMAL	HIGH
1 Hour Dead	14	7	5	Live Woody	150	125	100
10 Hour Dead	16	8	6	Live Herbaceous	150	125	100
100 Hour Dead	18	10	8	Upper Duff	n/a	n/a	n/a
1000 Hour Dead	n/a	n/a	n/a	Lower Duff	n/a	n/a	n/a
PRESCRIBED IGNITION AND FIRE BEHAVIOR							
Time of Ignition		March, April, May, June-August, September, October, November					
Ignition Method		Hand Ignition Black Line – Aerial ping pong or Helitorch					
Acceptable Firing Techniques/patterns		Strip Head, Flanking, Backing, Spot Ignition					
Fire Behavior Fuel Model Selection Rational:TL8				Fire Behavior Parameters:			
Primary carrier of fire in TL8 is moderate load long-needle pine litter, may include small amount of herbaceous load				Flame lengths between 1 to 6 feet. Rates of spread 1 to 13 chains/hr.			
	LOW	OPTIMAL	HIGH		LOW	OPTIMAL	HIGH
Spot Distance-Miles	.2	.4	.6	Prob. of Ignition	15	60	75
Flame Length-Feet	0-2	2-4	4-5	Rate of Spread-Chains/HR	0-3	3-7	7-13

Flame lengths will vary during the firing operation and may for short periods of time approach upper prescription parameters dependent upon firing techniques, weather conditions, fuel jackpots and topography. The firing boss will need to alter the firing techniques to maintain prescription parameters and may have to stop ignition operations until more favorable conditions exist.

Wind gust will increase Rate of spread to 15.4 chains per hour and flame length to 5.3 feet

Wind Gust Definition- NWS

Is a sudden, brief increase in speed of the wind. According to U.S. weather observing practice, gusts are reported when the peak wind speed reaches at least 16 knots and the variation in wind speed between the peaks and lulls is at least 9 knots. The duration of a gust is usually less than 20 seconds.

Fuel Model TL8

FIRE BEHAVIOR DECISION MATRIX (Rate of Spread) Fuel Model TL8

	20' Wind Speed/Mid Flame MPH (calculated with prescription WAF)																									
Fine Dead Fuel Moisture	20' Wind Speed/Mid Flame MPH (calculated with prescription WAF)																									
	%	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	3	1.7	1.9	2.1	2.5	2.8	3.2	3.6	4	4.5	4.9	5.4	6	6.5	7	7.6	8.2	8.8	9.4	10.1	10.7	11.4	12.1	12.8	13.5	14.2
	4	1.5	1.7	1.9	2.2	2.5	2.9	3.2	3.6	4	4.5	4.9	5.4	5.9	6.4	6.9	7.4	8	8.6	9.1	9.7	10.3	10.9	11.6	12.2	12.9
	5	1.4	1.6	1.8	2	2.3	2.6	3	3.3	3.7	4.1	4.5	4.9	5.4	5.8	6.3	6.8	7.3	7.8	8.3	8.9	9.4	10	10.6	11.1	11.7
	6	1.3	1.4	1.6	1.9	2.1	2.4	2.7	3	3.4	3.8	4.1	4.5	4.9	5.4	5.8	6.2	6.7	7.2	7.7	8.1	8.7	9.2	9.7	10.2	10.8
	7	1.2	1.3	1.5	1.7	2	2.2	2.5	2.8	3.1	3.5	3.8	4.2	4.6	5	5.4	5.8	6.2	6.6	7.1	7.5	8	8.5	9	9.5	10
	8	1.1	1.2	1.4	1.6	1.8	2.1	2.3	2.6	2.9	3.2	3.6	3.9	4.2	4.6	5	5.4	5.8	6.2	6.6	7	7.4	7.9	8.3	8.8	9.3
	9	1	1.2	1.3	1.5	1.7	1.9	2.2	2.5	2.7	3	3.3	3.6	4	4.3	4.7	5	5.4	5.8	6.2	6.6	7	7.4	7.8	8.2	8.7
	10	1	1.1	1.2	1.4	1.6	1.8	2.1	2.3	2.6	2.9	3.1	3.4	3.7	4.1	4.4	4.7	5.1	5.4	5.8	6.2	6.6	7	7.4	7.8	8.2
	11	0.9	1	1.2	1.3	1.5	1.7	2	2.2	2.4	2.7	3	3.3	3.6	3.9	4.2	4.5	4.8	5.2	5.5	5.9	6.2	6.6	7	7.4	7.8
	12	0.9	1	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.6	2.8	3.1	3.4	3.7	4	4.3	4.6	4.9	5.3	5.6	5.9	6.3	6.7	7	7.4
13	0.8	0.9	1.1	1.2	1.4	1.6	1.8	2	2.2	2.5	2.7	3	3.2	3.5	3.8	4.1	4.4	4.7	5	5.4	5.7	6	6.4	6.7	7.1	
14	0.8	0.9	1	1.2	1.3	1.5	1.7	1.9	2.1	2.4	2.6	2.9	3.1	3.4	3.7	3.9	4.2	4.5	4.8	5.1	5.5	5.8	6.1	6.5	6.8	

FIRE BEHAVIOR DECISION MATRIX (Flame Length) Fuel Model TL8

	20' Wind Speed/Mid Flame MPH (calculated with prescription WAF)																									
Fine Dead Fuel Moisture	%	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	3	2	2.1	2.2	2.4	2.5	2.7	2.8	3	3.1	3.3	3.4	3.6	3.7	3.9	4	4.1	4.3	4.4	4.6	4.7	4.8	5	5.1	5.2	5.3
	4	1.9	2	2.1	2.2	2.4	2.5	2.6	2.8	2.9	3.1	3.2	3.3	3.5	3.6	3.7	3.9	4	4.1	4.2	4.4	4.5	4.6	4.7	4.8	5
	5	1.7	1.8	1.9	2.1	2.2	2.3	2.5	2.6	2.7	2.9	3	3.1	3.2	3.4	3.5	3.6	3.7	3.8	4	4.1	4.2	4.3	4.4	4.5	4.6
	6	1.6	1.7	1.8	1.9	2.1	2.2	2.3	2.4	2.6	2.7	2.8	2.9	3	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4	4.2	4.3	4.4
	7	1.5	1.6	1.7	1.8	2	2.1	2.2	2.3	2.4	2.5	2.7	2.8	2.9	3	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4	4.1
	8	1.5	1.5	1.6	1.7	1.9	2	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9
	9	1.4	1.5	1.6	1.7	1.8	1.9	2	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.7
	10	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3	3.1	3.2	3.3	3.3	3.4	3.5	3.6
	11	1.3	1.4	1.5	1.6	1.6	1.7	1.8	1.9	2	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3	3.1	3.1	3.2	3.3	3.4	3.5
	12	1.3	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2	2.1	2.2	2.3	2.4	2.4	2.5	2.6	2.7	2.8	2.9	3	3	3.1	3.2	3.3	3.4
	13	1.2	1.3	1.4	1.5	1.6	1.6	1.7	1.8	1.9	2	2.1	2.2	2.3	2.4	2.5	2.6	2.6	2.7	2.8	2.9	3	3	3.1	3.2	3.3
14	1.2	1.3	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2	2.1	2.2	2.2	2.3	2.4	2.5	2.6	2.7	2.7	2.8	2.9	3	3.1	3.1	3.2	

Fuel Model TU5

Dry Climate Timber Shrub (Gambel Oak)

PRESCRIBED WEATHER CONDITIONS							
VARIABLE	LOW	OPTIMAL	HIGH	VARIABLE	LOW	OPTIMAL	HIGH
Temperature	35	70	85	Mid Flame Wind Speed	1.6	4.8	8.8
Relative Humidity	45	20	15	20’ Wind Speed	4	12	22
Fine Dead FM	14	7	5	20’ Gust Limit	33	27	25
Smoke Vector (Wind Dir)- South, East, West				Wind Adjustment Factor (WAF): .4			
Smoke Avoidance (Wind Dir)- See Attached smoke permit				WAF Rational-.4 Chosen due to canopy structure and past experiences burning in this fuel type.			
PRESCRIBED MOISTURE CONTENT OF FUELS							
SIZE CLASS /TYPE	LOW	OPTIMAL	HIGH	SIZE CLASS/TYPE	LOW	OPTIMAL	HIGH
1 Hour Dead	14	7	5	Live Woody	150	125	90
10 Hour Dead	16	8	6	Live Herbaceous	150	125	90
100 Hour Dead	18	10	8	Upper Duff	n/a	n/a	n/a
1000 Hour Dead	n/a	n/a	n/a	Lower Duff	n/a	n/a	n/a
PRESCRIBED IGNITION AND FIRE BEHAVIOR							
Time of Ignition		March, April, May, June-August, September, October, November					
Ignition Method		Hand Ignition Black Line – Aerial ping pong or Helitorch					
Acceptable Firing Techniques/patterns		Strip Head, Flanking, Backing, Spot Ignition					
Fire Behavior Fuel Model Selection Rational:TU5				Fire Behavior Parameters:			
Primary carrier of fire in TU5 is heavy forest litter with a shrub or small tree understory.				Flame lengths between 1 to 11 feet. Rates of spread 1 to 21 chains/hr.			
	LOW	OPTIMAL	HIGH		LOW	OPTIMAL	HIGH
Spot Distance-Miles	.2	.4	.6	Prob. of Ignition	15	60	75
Flame Length-Feet	0-6	6-8	8-11	Rate of Spread-Chains/HR	0-6	6-14	10-21

Flame lengths will vary during the firing operation and may for short periods of time approach upper prescription parameters dependent upon firing techniques, weather conditions, fuel jackpots and topography. The firing boss will need to alter the firing techniques to maintain prescription parameters and may have to stop ignition operations until more favorable conditions exist.

Wind gust will increase Rate of spread to 23.4 chains per hour and flame length to 11.4 feet

Wind Gust Definition- NWS

Is a sudden, brief increase in speed of the wind. According to U.S. weather observing practice, gusts are reported when the peak wind speed reaches at least 16 knots and the variation in wind speed between the peaks and lulls is at least 9 knots. The duration of a gust is usually less than 20 seconds.

FIRE BEHAVIOR DECISION MATRIX (Rate of Spread) Fuel Model TU5

Fine Dead Fuel Moisture	20' Wind Speed/Mid Flame MPH (calculated with prescription WAF)																									
	%	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	3	2.3	3	3.7	4.4	5.2	5.9	6.8	7.6	8.5	9.3	10	11	12	13	14	15	16	17	17.8	18.8	19.8	20.8	21.8	22.8	23.8
	4	2.2	2.8	3.4	4.1	4.9	5.6	6.4	7.2	8	8.8	9.7	11	11	12	13	14	15	16	16.8	17.7	18.7	19.6	20.6	21.5	22.5
	5	2.1	2.7	3.3	3.9	4.6	5.3	6.1	6.8	7.6	8.4	9.2	10	11	12	13	13	14	15	16	16.8	17.7	18.6	19.6	20.5	21.4
	6	2	2.5	3.1	3.8	4.4	5.1	5.8	6.5	7.3	8	8.8	9.5	10	11	12	13	14	14	15.2	16.1	16.9	17.8	18.7	19.6	20.4
	7	1.9	2.4	3	3.6	4.2	4.9	5.6	6.3	7	7.7	8.4	9.2	9.9	11	12	12	13	14	14.6	15.5	16.3	17.1	17.9	18.8	19.6
	8	1.9	2.4	2.9	3.5	4.1	4.7	5.4	6	6.7	7.4	8.1	8.8	9.6	10	11	12	13	13	14.1	14.9	15.7	16.5	17.3	18.1	18.9
	9	1.8	2.3	2.8	3.4	4	4.6	5.2	5.8	6.5	7.2	7.9	8.6	9.3	10	11	11	12	13	13.7	14.4	15.2	16	16.8	17.5	18.3
	10	1.7	2.2	2.7	3.3	3.8	4.4	5.1	5.7	6.3	7	7.6	8.3	9	9.7	10	11	12	13	13.3	14	14.8	15.5	16.3	17	17.8
	11	1.7	2.2	2.7	3.2	3.7	4.3	4.9	5.5	6.2	6.8	7.4	8.1	8.8	9.4	10	11	12	12	12.9	13.6	14.4	15.1	15.8	16.6	17.3
	12	1.7	2.1	2.6	3.1	3.7	4.2	4.8	5.4	6	6.6	7.2	7.9	8.5	9.2	9.9	11	11	12	12.6	13.3	14	14.7	15.4	16.2	16.9
	13	1.6	2	2.5	3	3.6	4.1	4.7	5.3	5.8	6.4	7.1	7.7	8.3	9	9.6	10	11	12	12.3	13	13.6	14.3	15	15.8	16.5
	14	1.6	2	2.5	3	3.5	4	4.5	5.1	5.7	6.3	6.9	7.5	8.1	8.7	9.4	10	11	11	12	12.6	13.3	14	14.7	15.3	16

FIRE BEHAVIOR DECISION MATRIX (Flame Length) Fuel Model TL5

Fine Dead Fuel Moisture	20' Wind Speed/Mid Flame MPH (calculated with prescription WAF)																									
	%	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	3	4.1	4.6	5.1	5.5	5.9	6.3	6.7	7.1	7.4	7.8	8.1	8.4	8.7	9.1	9.3	9.6	9.9	10	10.5	10.7	11	11.2	11.5	11.7	12
	4	3.9	4.4	4.8	5.3	5.7	6	6.4	6.8	7.1	7.4	7.8	8.1	8.4	8.7	8.9	9.2	9.5	9.7	10	10.3	10.5	10.7	11	11.2	11.4
	5	3.8	4.2	4.6	5	5.4	5.8	6.2	6.5	6.8	7.1	7.5	7.7	8	8.3	8.6	8.8	9.1	9.4	9.6	9.9	10.1	10.3	10.6	10.8	11
	6	3.6	4.1	4.5	4.9	5.2	5.6	5.9	6.3	6.6	6.9	7.2	7.5	7.8	8	8.3	8.5	8.8	9	9.3	9.5	9.7	10	10.2	10.4	10.6
	7	3.5	3.9	4.3	4.7	5.1	5.4	5.8	6.1	6.4	6.7	7	7.3	7.5	7.8	8	8.3	8.5	8.8	9	9.2	9.4	9.7	9.9	10.1	10.3
	8	3.4	3.8	4.2	4.6	5	5.3	5.6	5.9	6.2	6.5	6.8	7.1	7.3	7.6	7.8	8.1	8.3	8.5	8.8	9	9.2	9.4	9.6	9.8	10
	9	3.4	3.8	4.1	4.5	4.8	5.2	5.5	5.8	6.1	6.4	6.6	6.9	7.2	7.4	7.7	7.9	8.1	8.3	8.6	8.8	9	9.2	9.4	9.6	9.8
	10	3.3	3.7	4.1	4.4	4.7	5.1	5.4	5.7	6	6.2	6.5	6.8	7	7.3	7.5	7.7	8	8.2	8.4	8.6	8.8	9	9.2	9.4	9.6
	11	3.2	3.6	4	4.3	4.7	5	5.3	5.6	5.9	6.1	6.4	6.6	6.9	7.1	7.4	7.6	7.8	8	8.2	8.4	8.6	8.8	9	9.2	9.4
	12	3.2	3.5	3.9	4.3	4.6	4.9	5.2	5.5	5.8	6	6.3	6.5	6.8	7	7.2	7.5	7.7	7.9	8.1	8.3	8.5	8.7	8.9	9.1	9.3
	13	3.1	3.5	3.8	4.2	4.5	4.8	5.1	5.4	5.7	5.9	6.2	6.4	6.7	6.9	7.1	7.3	7.5	7.8	8	8.2	8.4	8.5	8.7	8.9	9.1
	14	3.1	3.4	3.8	4.1	4.4	4.7	5	5.3	5.6	5.8	6.1	6.3	6.5	6.8	7	7.2	7.4	7.6	7.8	8	8.2	8.4	8.6	8.8	8.9

Element 8: Scheduling

A. Ignition Time Frames/Season(s)	Burning may occur from March through November. Most likely will be implemented in the fall, but will burn when and if Rx parameters and weather conditions are met.
B. Projected Duration	Burning may occur March through November. Hand ignition units may take 3 to 6 days to implement. Black line operations may take 1 to 3 days to implement. Aerial ignition operations may take 1 to 2 days to implement. See attached smoke permit for additional Colorado State smoke duration requirements. The unit may be burned multiple times under this Burn Plan. This Burn Plan will remain in effect as long as it represents the conditions of the fuels and the Risk Analysis or until management direction dictates the need to update or abandon the burn plan.
C. Constraints	
<p>These constraints and considerations are specific to burn scheduling. Scheduling will be dependent on weather and fuels conditions, smoke permit conditions and availability of qualified personnel.</p> <p>At National Preparedness Levels Four and Five, prescribed fire implementation requires additional review and approval from the regional office/regional Forester. See National Interagency Mobilization Guide for details.</p> <p>Per the 2016 Prescribed Burn Approval Act, burning under NFDRS adjective ratings of “extreme” in the county or adjacent county requires additional notification and Regional Forester approval and reporting requirements.</p> <p>Approval for burning under PL4/5 or NFDRS “extreme” conditions must be documented through the “Regional Office Prescribed Fire Authorization Worksheet” which can be found on the Rocky Mountain Region SFAM Sharepoint site at: https://ems-team.usda.gov/sites/fs-r02-sfam/_layouts/15/start.aspx#/Shared%20Documents/Forms/AllItems.aspx?RootFolder=%2Fsites%2Ffs-r02-sfam%2FShared%20Documents%2FFuels%20and%20Fire%20Ecology%2FPrescribed%20Fire%20Concurrence-Approval%20Info%2FPL%204-5%20and%20NFDRS%20Approval%20Forms&FolderCTID=0x0120001C3E4D89AD19BB44BB05B6610FED46AC&View=%7B969F58C1-EB4B-416A-BD44-A0BCDE532356%7D</p>	

Element 9: Pre-burn Considerations and Weather

A. Considerations

1. On Site

- a. **Hunting Season:** Signs will be posted on open roads at least one week prior to opening day of hunting seasons.
- b. **Line Construction:** Control lines will need to be constructed along the fence lines bounding private property and in some other areas. This will need to be accomplished prior to burn dates. Construction can be completed with handcrews, or ATV drag. Final line location will have NEPA clearances and are depicted on the Project Map. ATV drag lines will not be constructed in drainage bottoms, wetlands, or within 25 feet of stream channels. Lines will not be constructed when soils are saturated. Snags which can compromise control lines will be lined or felled as needed. Ponderosa pine snags greater than 16' DBH will be lined, unless the snag will present an unreasonable threat to control lines.
- c. All constructed **control lines** will be posted with signs where they intersect with roads and trails indicating that it is a fireline and is closed to all vehicles, including bicycles, and horses. All control lines that intersect with open roads or trails will be blocked or rehabilitated to prevent motorized vehicle use and discourage non-motorized use following burns.
- d. **Fences:** Fences with wooden posts must be protected from fire during burning operations. The fences which bound private lands will be protected through line placement. Some of the well pad fences will require protection, although most are located in gravel or native soils. These fences will be evaluated prior to burns and mitigation action taken as needed. Fences within units will also be checked prior to burning. Fire danger to these fences can be mitigated through pulling back burnable material prior to the burn or altering firing techniques to minimize impacts to the posts.
- e. **Electric transmission lines:** Fuels around wooden power poles will need to be mitigated with an 18 inch buffer of bare mineral soil surrounding all wooden poles.
- f. **Snags:** Class 1 and 2 ponderosa pine snags greater than 16" DBH will be lined, brushed or foamed, as necessary. Class 3 snags greater than 16" DBH and class 1 and 2 snags 9-16" DBH will be protected by ignition techniques where feasible.

Snag Classification:

Class 1- represents those trees that have died recently and retain most of their bark and most of their branches; the top is intact. Very little decay has occurred in the wood, unless the tree had heart-rot decay when it was living.

Class 2- represents those snags that have been dead at least several years and have lost some branches and some bark (except grand fir and Douglas-fir, which tend to retain their bark after death); tops are often broken; there is some evidence of decay.

Class 3- represents those snags that have been dead a long time and lack branches and bark (except grand fir and Douglas-fir, which tend to retain their bark after death). Tops are broken off, and the sapwood and heartwood are extensively decayed.

2. Off Site

“Prescribed Fire” and or Caution Smoke ahead signs will be posted on Highway 160 so that they are visible to both east and west bound traffic. Signs will also be posted on Beaver Meadows and First Notch Roads. Additional sign will be placed on Forest Service RD 133 (Ute Park) both East and West sides where it intersects Beaver meadows and First Notch roads. Smoke will be monitored and the number and placement of signs will be modified as needed.

Prior to implementing the prescribed fire, the responsible dispatch office and local cooperators (Per Lower North Fork lessons learned) **will** be provided a complete copy (printed or electronic version) of the Prescribed Fire Plan.

B. Method and Frequency for Obtaining Weather and Smoke Management Forecast(s)

Proximity to nearest RAWS	Devil Mountain RAWS (Station id#055901)			
Need for on-site RAWS		Yes	X	No
Additional Information				
<p>As a minimum Fuel sticks, both elevated and at ground level, will be placed in a representative area within the burn area at least three days prior to the anticipated burn date. Weather information will be collected for two days prior to burning and provided to the NWS along with site information for spot weather forecasts. Each spot forecast, at a minimum, will request temperature, wind, relative humidity, transport winds and smoke dispersal for the day of the burn and the following day.</p> <p>A Spot Weather Forecast from the National Weather Service is required prior to ignition, for each day active ignition is occurring on the burn, and any days the fire is actively spreading. The National Weather Service Grand Junction. Forecast Office can be reached at 970-256-9463 or a spot weather forecast can be requested online at http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=gjt</p> <p>Within the remarks section of the Spot Weather Request form, a point of contact cellular phone number should be included in addition to data requested on the form. Requestors of the Spot Weather Forecast should insure data is correct.</p> <p>Projected weather beyond the ignition operation and need for additional spot weather forecasts should be taken into account in order to minimize the risk of a later escape. The Prescribed Fire Burn Boss or other person in charge of mop-up and patrol will also obtain and review the spot weather or general fire weather forecast to determine if mop up and patrol resources are adequate. A copy of the forecast will be included in the Project File.</p>				

C. Notifications

Who	When ¹	Phone Number and/or e-mail	Responsibility	Date	Contact Type ²
Durango Interagency Fire Dispatch	B, D, A	970-385-1325	Burn Boss		
Richard Bustamante CH1 San Juan Forest FMO	B, D, A	970-385-1346 (w) 970-749-8127 (c)	Burn Boss		
Chris Tipton DV8 SJNF-Central Zone FMO	B, D, A	970-884-1427 (w) 303-898-7128 (c)	Burn Boss		
District Ranger- Matt Janowiak	B, D, A	970-884-1438 (w) 970-764-7380 (c)	Burn Boss		
TBD San Juan Nation Forest Public Information Specialist	B, A	970-385-1219 (w) 970-799-1210 (c)	Burn Boss		
Durango Central	B	970-385-2900	Burn Boss		
Archuleta County and Pagosa Fire	B	970-731-4191	Burn Boss		
Archuleta County EM 1	B	970-371-2160(Dptch) 970-371-4799 (w)	Burn Boss		
Durango Fire & Rescue Authority	B	970-382-6000	Burn Boss		
Upper Pine River Fire Protection District	B	970-884-9508	Burn Boss		
Smoke Management	B, A	303-692-3224	Burn Boss		
San Juan Basin Health	B	970-247-5702	Burn Boss		
Colorado State Forest Service Durango	B	970-247-5250	Burn Boss		
Colorado State Patrol	B	970-385-1675	Burn Boss		
Los Pinos Fire Protection District	B	970-563-9501	Burn Boss		
Southern Ute Agency (BIA)	B	970-563-4571	Burn Boss		
ENERGY					
Tri-State Generation and Transmission Association Robert Flores	B	970-382-1934 (c) 303-254-3642 Dispatch	Burn Boss		
La Plata Electric	B	970-731-2316	Burn Boss		
Petrox Energy	B	970-878-5594	Burn Boss		
¹ When to Notify	Before (B): The day prior to burn day. Day of (D): Prior to ignition on burn day. After (A): After burn is completed.		² Contact Type	Phone Contact (PC) Phone Message (PM) Direct Contact (DC) E-mail (EM)	

<u>Private</u>					
Kathleen M Delzell Trust		B,D	970-884-7022	Burn Boss	
Jeffrey H Munger Revocable Trust		B,D	970-884-4927	Burn Boss	
William S Vance Jr		B,D	970-884-2635	Burn Boss	
Edwards Durwood		B,D	Call Arch County Later for #	Burn Boss	
Bryan H and Marites G Tracy		B,D	Call Arch County Later for #	Burn Boss	
¹ When to Notify	Before (B): The day prior to burn day. Day of (D): Prior to ignition on burn day. After (A): After burn is completed.		² Contact Type	Phone Contact (PC) Phone Message (PM) Direct Contact (DC) E-mail (EM)	

Tri-State Generation and Transmission would like to be notified 15 days prior to ignition to coordinate operations within their organization.

Element 10: Briefing

Operational Briefing (Responsibility – Prescribed Fire Burn Boss)

- ☐ Introduction of Burn Organization
 - Make Crew and Equipment Assignments
- ☐ Provide Description of Prescribed Fire Area and Maps
- ☐ Review Prescribed Fire Objectives and Constraints
- ☐ Review Spot Weather Forecast
- ☐ Discuss Weather Data Collection Procedures
 - Make Weather Observer Assignment and Set Collection Schedule
- ☐ Review Predicted Fire Behavior
- ☐ Review Burn Prescription and Critical Weather that Will Terminate Burn
- ☐ Review Ignition Plan and Possible Problems
- ☐ Review Aerial Ignition Plan and appropriate safety procedures (if applicable)
- ☐ Review Holding Plan and Possible Problems
- ☐ Review Contingency and Wildfire Conversion Plan
 - Identify High Value and Areas of Special Concern
 - Identify Mitigation Measures, Procedures, Project Boundary, Etc.
- ☐ Review Safety and Medical Plan along with Risk Assessment/JHA
 - Identify On-Site Personnel with Medical and Helitack Qualifications
- ☐ Review LCES and Identify Lookout Assignments
- ☐ Discuss Communication Plan

Crew Briefing (Responsibility - Ignition Specialist and Holding Specialist Functions)

- ☐ Make Crew Assignments, Record Names, and Review Chain of Command
- ☐ Make Equipment Assignments and Physically Test Equipment Prior to Ignition
- ☐ Assign Radio Frequencies and Physically Test All Radios Prior to Ignition
- ☐ Review Contingency Plan, Wildfire Conversion, Procedures, and Mitigation
- ☐ Review Everyone's Personal Protective Equipment
- ☐ Discuss Probable Starting and Ending Times
- ☐ Assure Everyone Knows Position, Responsibility, and Procedures

Element 11: Organization and Equipment

Minimum Workforce & Equipment Needed to Conduct Burn							
A. Positions							
		Low		OPTIMAL		High	
Position	ICS Code or Unit of Measure	Total Amount	Line Building Rate	Total Amount	Line Building Rate	Total Amount	Line Building Rate
Prescribed Fire Burn Boss	RXB2	1	0	1		1	
Ignition Specialist Function	FIRB	1		1		1	
Holding Specialist Function	ST/TFLD	1		1		1	
Fire Effects Monitor	FEMO	1		1		1	
Lookout	SRB	1		1		1	
Engine Boss, Operator, and Crew	ENGB/ENOP	2		2		2	
Ignition Crew	FFT2	20	20	20	20	20	20
Holding Crew	FFT2	10	10	10	10	10	10
Smoke Monitor	FFT2	1					
B. Equipment							
Engine (Type)	Type 6	2	24	2	24	2	24
Engine (Type)	Type 3	1	12				
Dozer (Type)	N/A						
ATV/UTV	N/A	2					
Helicopter	Type 3	1-As Needed		1-As Needed		1-As Needed	
Helitorch	Type 3	1-As Needed		1-As Needed		1-As Needed	
Plastic Sphere Dispenser	Type 3	1-As Needed		1-As Needed		1-As Needed	
C. Supplies							
At a minimum the following supplies will be needed on scene							
<ul style="list-style-type: none"> • Drip Torches • Drip Torch Fuel • Ping Pong Balls • Other ignition equipment necessary to assist burning • Appropriate road signage 							
Total Line Production Rate			66		66		66

There will need to be minimum Line production rate from personnel of 66 chains per hour on site to begin any ignitions. Fireline Handbook production rates and/or documented empirical evidence to justify minimum holding resources required. Line production rates should be compared to fire behavior outputs when identifying resource needs.

No personnel will be assigned collateral duties

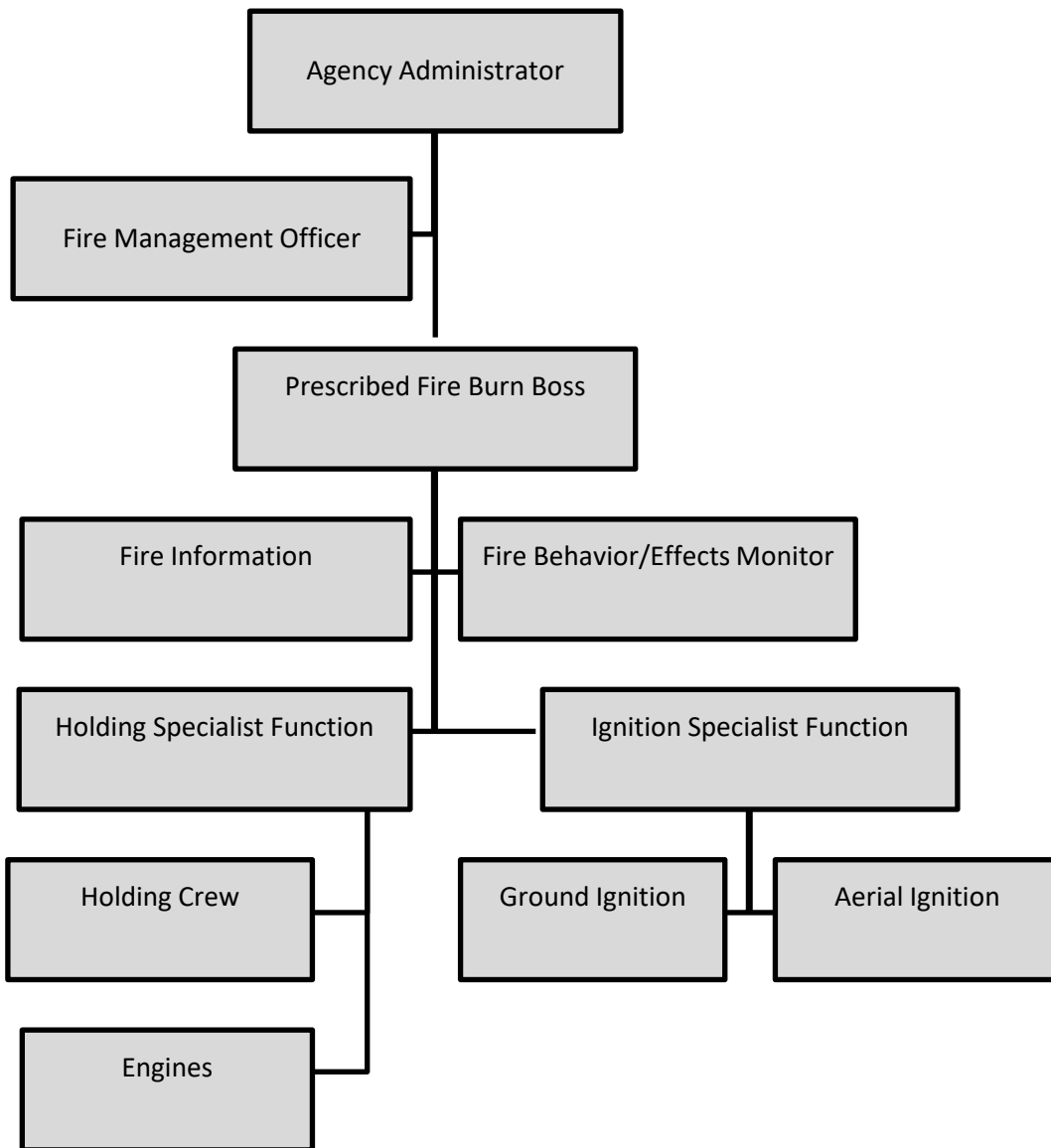
Calculations were taken from the Fireline Handbook Appendix A based on fuel models in the plan
Based on terrain, values at risk and location 1-2 IHC's will be required to be on scene during second entry operations

There will need to be minimum Line production rate from personnel of 54 chains per hour on site to begin any ignitions. Fireline Handbook production rates and/or documented empirical evidence to justify minimum holding resources required. Line production rates should be compared to fire behavior outputs when identifying resource needs.

No personnel will be assigned collateral duties

Calculations were taken from the Fireline Handbook Appendix A based on fuel models in the plan

Organization Chart



Additional resources may be assigned to the project without amending the burn plan if the addition of these resources does not change the complexity of the burn or require additional supervisory positions. These changes must be documented in the Unit Log. Reduction in resource capabilities identified as required in the plan requires an amendment. As the prescribed fire progresses from ignition to holding to mop up and patrol, specified capabilities and/or types of resources may be adjusted.

Element 12: Communication**A. Radio Frequencies**

Channel	Function	Frequency		Band Width	Assignment	Remarks
COMMAND						
5	FS E RPTR	TX: RX: Tone:	164.937 169.925 167.9	N	Communication w/ Durango Dispatch	Group 5, channel 6, Tone 3 Pargin
		TX: RX: Tone:				
TACTICAL						
1	TAC 1	TX: RX:	168.175 168.175	N	Ignition	Group 5, channel 1
3	TAC 3	TX: RX:	168.775 168.775	N	Holding	Group 5, channel 3
AIR OPERATIONS						
15	A/G 31	TX: RX:	171.525 171.525	N	A/G Primary Aerial Ignition	Group 5, channel 15
14	A/G 7	TX: RX:	166.850 166.850	N	A/G Secondary	Group 5, channel 14
OTHER						
2	FIRETAC7	TX: RX:	169.287 169.287	N	Interagency Communication	Group 5, channel 2
4	VFIRE21	TX: RX:	154.280 154.280	N	Local Resources	Group 5, channel 4
REMARKS						
Positive communications with a dispatch center is required via radio, cellular phone, and/or satellite phone, prior to implementing burn project.						

Element 13: Public and Personnel Safety, Medical

A. Safety Hazards

Firefighter
Safety hazards include, but are not limited to, smoke inhalation and impaired visibility, tripping and falling, ATV rollover, entrapment, minor burns, fatigue and dehydration, vehicle accidents, stinging insects. Aviation (Heli torch, ping pong) operations. All personnel who are within the active burn area are required to wear personal protective equipment.
Public
A robust outreach will be implemented in the months prior to ignition so all public and recreationists are aware of the project implementation time frames. All control lines and burn units will be scouted for public by either ground resources and or Helicopter.

B. Measures Taken to Reduce the Hazards

<ol style="list-style-type: none"> 1. <u>Smoke inhalation/visibility</u>: Minimize exposure. Increase loft when possible. Rotate personnel out of smoke. Use flashing lights on all vehicles. 2. <u>Tripping and Falling</u>: Wear proper footwear. Minimize number of personnel on very steep slopes. Slow down. 3. <u>ATV rollover</u>: Ensure all ATV operators are trained and qualified. Be extra careful with loads such as water tanks, torches and supplies. 4. <u>Entrapment</u>: All personnel on firing crew have radios. Maintain good communication, firing sequence and pattern. Observe and communicate fire behavior and hazards. 5. <u>Fatigue and Dehydration</u>: Take frequent food and water breaks. Rotate personnel into physically demanding positions. Ensure all personnel are consuming sufficient water. Have extra supplies of water available. 6. <u>Minor burns from Drip Torches</u>: All personnel on firing crew must understand operation of drip torches. Do not use leaky torches. Avoid dripping fuel mix on gloves or clothing. Refill torches in a safe location away from active fire. 7. <u>Vehicle Accidents</u>: Wear seatbelts and obey traffic laws. Practice defensive driving. 8. <u>Insect bites</u>: When wasp or bee nests are found make sure to let other personnel know of the location. Flag the area if they are located in a high use area. 9. <u>Aviation Operations</u>: Maintain positive communications to ensure ground resources are all in the proper staging or assigned areas. See Attached PSD Project Aviation Safety Plan <p>A job hazard analysis (JHA) or other agency-specific risk analysis is required for each prescribed fire.</p>

Trauma Assessment Categories & Patient Transport Categories

	Trauma Assessment	Patient Transport Methods
Level One		
Immediate lifesaving intervention required	Examples- Unstable airway, severe facial trauma with compromised airway, facial burns, suspected head injury with LOC > 5 min, positive MOI for spinal cord injury, cardiac injury, open chest wound, flail chest, pelvic trauma, multiple long bone fractures, penetrating trauma to the head/neck/face, electrical injury, greater than 20% surface area burn combined with any other injury, multi system trauma, arterial bleeding, massive crush injury. Vitals -Systolic BP<100 (No peripheral pulse) or cardiac arrest, GCS<8	Automatic launch-Flight for Life + Hoist Helicopter +Emergency Ground Response. RESPONSE CONTINUED UNTIL PATIENT TRANSPORTED
Level Two		
Significant Injury with high risk of needing lifesaving intervention	Examples-Facial trauma with NO airway compromise, pelvic fractures with no shock, suspected pelvic fracture, multiple long bone fractures with no shock, known solid organ injury, amputation of distal extremities, open fractures, penetrating trauma with no arterial bleeding and stable vital signs, falls less than body height, GCS 9-13 with LOC< 5min	Automatic launch-Flight for Life + Emergency Ground Response Standby Hoist Helicopter RESPONSE CONTINUED UNTIL PATIENT TRANSPORTED
Level Three		
Patient with moderate risk of needing lifesaving intervention	Examples- Dehydration, possible bone fractures, heat related illnesses , abdominal pain, immobilized with no significant injury, LOC < 5 min, GCS 14-15, superficial soft tissue trauma	Automatic launch -Emergency Ground Response Automatic Airborne Standby -Flight for life RESPONSE CONTINUED UNTIL PATIENT TRANSPORTED
Level Four		
Patient with low risk of needing lifesaving intervention	Examples -General cold, minor lacerations, sprains, strains, flu like symptoms, severe blisters, poison ivy reaction, rash.	Automatic launch-NON emergency Ground Response Automatic Ground Standby-Flight for life
Level Five		
Patient with no risk of needing lifesaving intervention	Examples -Nuisance aches and pains, minor blisters, minor sunburns.	Agency/Crew/Engine/Safety Officer Transport

Emergency Medical Procedures

C. In the event of serious accidents or injuries, the burn boss shall be notified immediately. Individuals with medical qualifications (i.e. First Responder, EMT, Paramedic) and helitack qualified should be identified at the pre-burn briefing. The burn boss will initiate on-site response (if not already in progress) and coordinate additional response needs through: Durango Dispatch. Provide dispatch with the type(s) of injury, number of persons injured, and basic vital signs. Utilize on-site EMTs and/or first aid treatment to stabilize and comfort the patient(s). **Do not transmit names of injured personnel over the radio.**

EMS will be activated through contacting dispatch (or from on-site personnel through 911). For burn injuries, after on-site medical response, initial medical stabilization, and evaluation at a primary care facility are completed, District Managers will ensure that any employee whose injuries meet burn injury criteria is immediately referred to the nearest regional burn center.

D. Emergency Evacuation Methods

Level 5 patient option ground transport via on-site vehicles to Mercy Medical Center.

For minor injuries, individuals who are ambulatory will be transported to Mercy Medical Center. Directions from the burn unit to the medical facility are as follows: Take Hwy 160 West for 27 miles, Turn right onto Three Springs Blvd, at the traffic circle continue straight to stay on Three Springs Blvd. The travel time is about 30 minutes. Medical facility will be contacted and advised of injuries and eta for transport of injured individual.

Level 5 patient ground transport option 2 is to transport the injured person(s) to meet an ambulance at location known to both project personnel and emergency services.

These locations can be on Hwy 160 at: beaver meadows RD or First notch RD. These locations will be briefed and known to all prior to implementation.

Levels 3 and 4 where transport to the nearest Helispot to be evacuated via air ambulance is required

Helispot 1 - N 37 14.167 W 107 20.478 – Piedra River Gravel Pit
Helibase - N 37 14.425 W 107 32.463 - Sauls Creek Forest RD 528
See Attached Map

The fourth option is to care for and protect the injured person(s) while emergency services respond on-site to extract and transport the injured. Send personnel to meet and lead emergency services to the site. Refer to the Trauma assessment Categories & Patient Transport Categories levels 1 and 2 on page 28

--

E. Emergency Facilities

EMERGENCY TRANSPORTATION								
NAME	TELEPHONE	LOCATION	PARAMEDICS					
			YES	NO				
Flight For Life	800-332-3123 or 720-321-3900 (Dispatch)	1010 Three Springs Blvd Durango, CO	X					
Tri-State Care Flight	800-800-0900 (Dispatch) 970-382-7790 (Office)	Durango Base 1934 E. 2 nd Ave Durango, CO.	X					
Air Care	800-452-9990	Farmington, NM	X					
St Mary's Air Life	800-332-4932	Grand Junction, CO	X					
HELISPOT CLOSEST TO PROJECT	LAT.	N - 37 14.167	LONG.	W – 107 20.478				
HOSPITALS & MEDICAL FACILITIES								
NAME	ADDRESS AND LATITUDE AND LONGITUDE	TRAVEL TIME (MIN)		PHONE	HELIPAD		BURN CENTER	
		AIR	GROUND		YES	NO	YES	NO
Mercy Medical Center	1010 Three Springs Blvd Durango, CO 37 14.166 x 107 49.654	10	30	970-247-4311	X			X
San Juan Regional	801 W Maple St. Farmington, NM 36 43.461 x 108 13.084	40	120	505-325-5011	X			X
University of Colorado Hospital	12605 E 16 th Ave Aurora, CO 80045 39 44'31.6" x 104 50'33.5"	120	360	720-848-0747	X		X	
University of New Mexico	2211 Lomas Blvd NE Albuquerque, NM 35 5.266 x 106 37.100	70	220	505-272-2111	X		X	
University of Utah Medical Center	50 North Medical Drive Salt Lake City, Utah 40°46.01 x 111°50.19	150	430	801-581-2121	X		X	
St Mary's Hospital	2635 N. 7 th Street Grand Junction, CO 39° 05.42 X 108° 33.74	100	285	970-244-2273	X			X

Element 14: Test Fire

A. Test Fire Provisions and Planned Location

The test fire must be ignited in a representative location and in an area that can be easily controlled. The purpose of the test fire is to verify that the prescribed fire behavior characteristics will meet management objectives and to verify predicted smoke dispersion. In many applications, analysis of the initial ignitions may provide adequate test fire results. On multiple-day projects, evaluation of current active fire behavior, in lieu of a test fire, may provide a comparative basis for continuing and must be documented. If in doubt however, initiate a separate test fire and evaluate results.

Pre-operational test fire - Optional

In addition to the above requirements of a test fire, a supplemental pre-operational test fire will be allowed under this burn plan whereas reasoning, requirements and conditions will be described as follows. **A pre-operational test fire can be defined as a test fire that takes place 1-3 days prior to full project implementation and is not greater than ½ acre in size.** The objective of a pre-operational test fire is to properly evaluate fuel and fire behavior conditions at a representative location and time of day. Lessons learned outlined in element 14 of the 2013 Interagency Prescribed Fire Planning and Implementation Procedures Guide clearly state that “Test fires ignited early in the day can sometimes lead a burn boss to under predict fire behavior in the afternoon” as well as “Test fires conducted in locations that were in cooler or moister locations, or in fuels with a different kind of fire behavior than the prescribed fire area, yielded misleading results (for example, fire behavior was lower: lower flame lengths or rate of spread (or both))”. In short, by conducting a pre-operational test fire the burn boss will obtain critical information necessary to make an informed decision including: 1) whether or not resource/prescribed fire objectives will be met 2) an advantage of knowing ahead of time whether or not to order prescribed fire resources for full implementation.

The pre-operational test fire for VP Unit 1 will meet the main test fire criteria stated above with additional criteria.

Located and ignited where it can be easily suppressed.

In a representative location with regard to fuel, weather and topography.

Organization required for the pre-operational test fire: RXB2 (1), FIRB (1), Single Resource Holding Boss (1), 2 Type 6 Engines with 2 personnel minimum. A total of 7 persons will be required with proper qualifications.

Meet requirements of both Agency Administrator Ignition Authorization and Prescribed Fire GO/NO-GO Checklist.

Prescribed Fire Name: Vallecito Piedra Integrated Vegetation Management Plan

Ignition Unit Name: VP Unit 1

B. Test Fire Documentation

Location:	
------------------	--

Date and Time:	
-----------------------	--

Weather/Fuels Conditions	
Cloud Cover %	
Temperature	
Relative Humidity	
Fine Dead Fuel Moisture	
Wind Speed	
Fuels	

Test Fire Results	
Flame Length	
Rate of Spread	
Smoke Dispersion	
Other	

The test fire meets the prescription parameters	Yes		No	
--	------------	--	-----------	--

Element 15: Ignition Plan

A. Firing Methods & Devices
<p style="text-align: center;">Ground and Aerial will be used for the Yellow Jacket Rx.</p> <ul style="list-style-type: none">• Helicopter with PSD unit• Helicopter with Heli-torch unit• Drip Torches• Remote firing devices/guns
B. Ignition Techniques, Patterns, & Sequences
<p>Blackline Ground Ignition: Blackline operations will be implemented by ground crews. Ground ignitions for unit 1 will begin at a safe anchor point on the highest point and downwind side of this unit. Strips will proceed generally downhill and into the wind building depth of 500 feet from the control lines.</p> <p>Aerial Ignitions operations: The firing boss will begin aerial ignitions after all blackline operations are far enough ahead to identify the boundaries of the units and provide safety of the ground personnel. Ground ignition crews will stay ahead of the aerial ignition operation. Strip head firing or dot firing will be utilized to bring fire down through each unit. This may need to be in a general backing fashion to minimize impacts to the residual stand.</p> <p>The Ignition Specialist and Holding Specialist functions are expected to work closely together to see that the ignition pattern and sequence do not present concern for control of the burn. The (wind or slope and aspect) should be the dominant influence for fire behavior and the primary factor in establishing the ignition pattern and sequence for the unit. Flame length and intensity will dictate ignition technique and strip width</p> <p>The distance between ignition lines or points and the sequence of igniting them is determined by weather, fuel, topography, ignition technique, and other factors which influence fire behavior and fire effects be will discussed and altered to achieve the fire effects wanted for a successful operation.</p>
C. Ignition Staffing
<p>Minimum capabilities needed for ignition are identified under Element 11 - Organization and Equipment. The Ignition Specialist function will be held at the (ICS position) level based on complexity of burn and ignition operation.</p> <ul style="list-style-type: none">• Blackline operations: Number of ignition personnel will be determined by the Burn Boss and will follow the needs discussed in element 11 (Organization and Equipment).• Aerial Ignition Operations: Aerial Ignition Staffing will be in accordance with policy set forth in the Interagency Aerial Ignition Guide.

Element 16: Holding Plan

A. General Procedures for Holding
<p>A minimum of 2 type 6 engines and 20 firefighters with ATV/UTV access will patrol roads adjacent to burn units during firing. Holding resources will check lines before firing occurs to ensure lines are clear of debris and all ladder fuels and snags have mitigated as needed. Holding resources will observe fire behavior and report any spots outside the line to the holding boss. Holding boss will notify the burn boss if firing needs to stop or if firing crew needs to assist in holding.</p> <p>Closest water source is the Piedra river access off of HWY 160 and FS roads 168 to 621</p>
B. Critical Holding Points and Actions
<p style="text-align: center;">UNIT 1</p> <ul style="list-style-type: none"> • <u>South side of unit 1</u> transitions from good road access to two track road network these are passable by ATV/UTV, diligent patrol efforts will need to be maintained. Consider hoselays with portable tanks to store water, and or UTV with water capability. See attached Aerial ignition unit map (Ohmaha and Delta Aerial ignition reference units). • <u>West side of unit 1</u> borders private allotment. Good road access will allow engines type 6 or larger to patrol. (See attached Aerial ignition unit map unit Charlie) • <u>North side unit 1</u> consists of the Beaver meadows and first notch roads which is passable by a type 6 or larger truck, a small section of handline completes the northeast corner and is accessible by ATV/UTV. (See attached Aerial ignition unit map units Alpha and Bravo) • <u>East side of unit 1</u>. Good road access on the First Notch road will allow for type 6 engines or larger patrol, the remaining trail is ATV/UTV. (See attached Aerial ignition unit map unit Charlie)
C. Minimum Organization or Capabilities Needed
<p>Minimum capabilities needed for holding are identified under Element 11 - Organization and Equipment. The Holding Specialist function will be held at the (ICS position) level based on complexity of burn and holding operation. On burn day and subsequent days of the prescribed fire, a mix of the number and kinds of hand crews and engines may be modified as long as stated production capabilities are not compromised. As the prescribed fire progresses from ignition to holding to mop up and patrol, specified capabilities and/or types of resources may be adjusted.</p> <p>Different organizations may be identified for different phases of implementation (i.e. holding v. mop-up and patrol, different ignition operations, different prescriptions). If flexibilities are built into the Prescribed Fire Plan, there must be a clear statement as to the work capability requirements of the resources at the various stages of the prescribed fire.</p>
D. Mop-up and Patrol

The prescribed fire burn boss will determine resource needs for mop up based on current and expected fire behavior and weather and assign resources accordingly. Documentation needs to be completed on a daily basis until the fire is declared out, and included in the final project file.

Element 17: Contingency Plan

A. Trigger Points

On a burn day trigger points will be set by the Burn boss and communicated to all personnel in the daily briefing. Trigger point factors to be considered include: wind speed and direction, relative humidity, fine dead fuel moisture and probability of ignition, frequency of torching and spot fires, and smoke impacts to sensitive areas. Most of these factors relate directly to the environmental prescription and can be used as a guideline for trigger points but ultimate discretion is left to the burn boss. The burn boss will give strong consideration for trigger points related to smoke impacts affecting roadways and/or communities and any slop-overs or spot fires outside the project area that may threaten private property.

B. Actions Needed

If the contingency actions are successful at bringing the project back within the scope of the Prescribed Fire Plan, the project may continue. If contingency actions are not successful by the end of the next burning period, then the prescribed fire will be converted to a wildfire.

1. Contingency Plan for Going Out of Prescription at Low End:

(**Low End** = Minimum Conditions for Burning, i.e. High RH, High Fuel Moisture, Low Temperatures, etc.)

Ignitions will stop when and where it is safe if the project is out of prescription at the low end and objectives are not being met. Construction of new control lines and mop-up may be necessary to reduce smoke production and manage patrolling of the ignited block.

2. Contingency Plan for Going Out of Prescription at High End:

(**High End** = Maximum Conditions for Burning i.e. Low RH, Low Fuel Moisture, High Temperatures, Winds, etc.)

The burn boss should make all efforts to monitor weather and fire behavior to avoid compromising prescriptions. Should the high-end prescriptions be met, firing will cease and all lighters will immediately become holders. Mop-up tactics or check line construction may be utilized if the burn boss feels that the high-end conditions will become long term. Depending on current and expected conditions, burn boss may contact dispatch for more resources to assist in monitoring and holding to mitigate an escaped fire potential. These resources may include, but are not limited to, contingency resources and other available resources.

3.Contingency Plan for Addressing Trigger Points:

Fire leaving the project area: If fire leaves the prescribed fire area appropriate resources will be shifted to contain fire propagation and communicate needs and concerns to Burn Boss. Two other Rx units are adjacent to this project so options are available to contain fire in other units as well. Established spot fire on private land will be declared a wildfire.

Fire threatening private property: Any fire that threatens private property will be communicated to the Burn Boss and suppressed with the appropriate on scene resources to eliminate the threat.

Smoke Impacting the Highway: If adverse smoke impacts the highway the Burn Boss will initiate communication with the Colorado State Patrol in include the correct actions to be taken (slowing traffic or escorting traffic)

Extended Weather Forecast: Any adverse forecast in extended outlooks will be addressed and considered prior to RX implementation. If favorable extended outlooks are modified to be not favorable after ignition then appropriate responses will be developed based on the condition forecasted and resources assigned as needed to address “Lower North Fork” mitigations.

Special Weather Updates: Special weather updates will be communicated to all relevant RX personal.

Frequency of Torching and Spot Fires: If frequency of torching is impacting the desired fire effects changes will be made in firing techniques. If this is not successful then firing operation might be put on hold until conditions improve. Holding Boss will notify Burn Boss if frequency of spot fire is hampering holding conditions and communicate the appropriate response to be taken.

C. Additional Resources and Maximum Response Time(s)

Resource	Agency & Location	Maximum Response Time	Conformation of Availability*	
			Yes/No	Date
Type 3 Engine		2.0 Hours		
Type 6 Engine		2.0 Hours		
Dozer		4.0 Hours		
Helicopter w/bucket		3.0 Hours		
Type 1 or Type 2 hand crew		0-24Hours		

* To be completed within one day of the burn and adjusted during course of extended burning conditions.

The minimum contingency resources needed to implement project is 2 Type 6 Engines and one 20 person crew. The maximum response time allowed for either crew will be 12 hours. Resources were determined using local fire knowledge and production rates for an anticipated spot fire outside of the unit using behave plus when fire is at or outside of prescription on the high range. Dispatch will be contacted prior to implementation to ensure that the contingency resource is available.

Every effort will be made to identify unique contingency resources for the VP Unit 1 Rx, if the same contingency resources are identified for multiple prescribed fire projects within the Forest, the Rx manager, Rx burn boss, and line officer must evaluate and

document adequacy of all contingency resources within the area. This evaluation must consider:

- Local, current, and predicted fire danger
- Local and regional wildland fire activities.
- Other Resources.

Once a contingency resource is committed to a specific wildland fire action (wildfire, wildland fire use or prescribed fire), it can no longer be considered a contingency resource for another prescribed fire project and a suitable replacement contingency resource must be identified or the ignition halted. The Agency Administrator will determine if and when they are to be notified that contingency actions are being taken. If the contingency actions are successful at bringing the project back within the scope of the Prescribed Fire Plan, the project may continue. If contingency actions are not successful by the end of the next burning period, then the prescribed fire will be converted to a wildfire.

Element 18: Wildfire Declaration

A. Wildfire Declared By

The Prescribed Fire Burn Boss will have the authority to declare the prescribed fire a wildfire. If any of the following situations occur, the burn will be declared a wildfire, initial attack will occur, and appropriate management response will take place.

1. Contingency actions have failed or are likely to fail and cannot be mitigated.
2. Fire outside of the project area.
3. Costs for control exceed available project funds.

Prescribed Fire Burn Boss determines that the contingency actions have failed or are likely to fail and cannot be mitigated by the end of the next burning period. A prescribed fire must be declared a wildfire when the fire has spread outside the project boundary, or is likely to do so, and cannot be contained by the end of the next burning period. A prescribed fire can be converted to a wildfire for reasons other than an escape.

A prescribed fire declared a wildfire cannot be returned to prescribe fire status until the appropriate level of review. When a prescribed fire is declared a wildfire, managers still have the full range of fire management options available based on Land Use Plan (LUP) and Fire Management Plan (FMP) objectives. If a prescribed fire is declared a wildfire, a wildfire number will be assigned and all wildfire management costs will be charged to that number.

B. IC Assignment

Should a wildfire be declared, the Prescribed Fire Burn Boss will become the Incident Commander until relieved or replaced. When practical, a risk analysis will be completed to determine the appropriate complexity level and an IC Type 3 or 4 with the corresponding qualifications will be assigned as appropriate. The IC will organize all on-site resources for a safe and aggressive response. Personnel within the prescribed fire organization will transition into ICS wildfire positions they are qualified to carry out. The IC will order additional suppression resources identified in the Contingency Plan as well as any other required resources necessary to support the suppression effort.

Upon a wildfire conversion occurring, all overhead personnel will begin to document actions taken prior to wildfire conversion and subsequent actions on a Unit Log. After the incident is contained, the Prescribed Fire Burn Boss will submit a post fire report documenting weather, resources on site, ignition operations, holding actions, and other pertinent data. All prescribed fires declared a wildfire will have a review initiated by the appropriate level Agency Administrator. The level and scope of the review will be determined by agency policy.

C. Notifications

The Prescribed Fire Burn Boss/IC will notify Zone Duty officer who will in turn notify the Forest duty officer using Durango Dispatch Center. Zone Duty officer will then notify the Columbine District Ranger and the Regional Fuels Specialist. Durango Dispatch will notify contacts listed on the notification plan of the wildfire and the current situation.

Burn boss will notify regional fire management officer within 24 hours of an escape, threat of an escape, or activation of contingency resources identified in the plan, or any prescribed fire that requires additional resources or operational time not accounted for in the IAP or prescribed fire plan.

D. Extended Attack Actions and Opportunities to Aid in Fire Suppression

Ignition will cease upon notification of fire outside of the primary and secondary units except as needed to secure lines. The appropriate management response will be used in order to flank the fire with suppression resources until the forward rate of spread is stopped. The containment strategy will be to utilize safe anchor points and create direct fire line where feasible and indirect fire line, including burning out, depending upon location of natural barriers and roads. The FMO and/or IC, Resource Advisor, and Agency Administrator may develop a WFDSS, which will determine the appropriate management response to the escaped fire. Use of the Wildland Fire Decision Support System (WFDSS) is required when a wildfire escapes initial attack.

Opportunities to aid in fire suppression include: utilize existing roads in the vicinity of the burn unit, moist drainages, and changes in fuels.

Element 19: Smoke Management and Air Quality

A. Compliance					
<p>A smoke permit will be obtained prior to ignition from the Colorado APCD. Conditions of the permit will adhere to (total acres, daily acres, total piles, daily piles, smoke dispersion, and wind direction).</p> <p>The Burn Boss will schedule and manage the burn under conditions when smoke regulations will not be violated</p>					
<p>B. Permits to be obtained: A Broadcast Prescribed Fire Permit must be obtained from the Colorado Department of Environmental Quality – Air Quality Control Division.</p>					
Smoke Management Number:					
<p>The Burn Boss will submit the following forms:</p> <ol style="list-style-type: none"> Form D Notification will be submitted 2-48 hours of ignition. From E Daily Actual Fire Activity will be submitted by 1000 the day following ignition. 					
C. Smoke Sensitive Receptors					
Identify any non-attainment or Class I airsheds within 15 miles:		Weminuche Wilderness Area (Class 1 Airshed).			
Receptor	Direction	Distance	Receptor	Direction	Distance
Bayfield	West	14 miles			
Weminuche Wilderness	North	11 miles			
D. Potentially Impacted Areas					
<p>Smoke impacts maybe felt in the town of Bayfield but impacts from smoke should be minimal. Smoke may impact individual rural residences along the HWY 160 corridor.</p> <ol style="list-style-type: none"> The Town of Bayfield is located 13 plus miles west of the burn unit. Daytime smoke impacts should be minimal with the acceptable wind directions. Nighttime impacts are unlikely. U.S. Highway 160 is between one half and three miles south of the burn unit. The highway could receive smoke impacts depending upon the unit being burned and wind direction. The Weminuche Wilderness Area, a Class 1 air shed is located 11 miles north of the project area. It is unlikely to receive significant daytime impacts and should not receive any nighttime impacts. 					

E. Mitigation Strategies and Techniques to Reduce Smoke Impacts

. In the event of unacceptable smoke impacts as indicated by visibility on the highway, or significant smoke within the town of Bayfield, one of two options will occur at the discretion of the Burn Boss.

1. Cease lighting until smoke dispersal conditions improve. If smoke conditions do not improve, lines will be constructed to halt fire spread and heavier fuels will be mopped up where feasible. As an alternative to mopping up of larger fuels, especially in the interior of the unit and when larger fuels are very dry, they may be bone piled and allowed to burn up quickly.
2. Finish burning the unit as quickly as possible and begin mop-up or bone piling operations on larger fuels to reduce nighttime smoke impacts. The decision of whether to halt ignition, construct lines, mop-up or bone pile will be based on which option(s) will be the easiest to implement based on time of day and number of personnel on the burn and minimizing smoke impact.
3. By following the prescribed synoptic weather conditions, we should experience good smoke dispersion during the daytime hours. A fair or better prediction is required before aerial burning. Smoke should rise and disperse so that no visibility impacts are experienced. This project is adjacent to Sauls Creek Rx, Yellow Jacket and Pargin Rx implemented fall 2014, 2015 and 2016 where smoke impacts to visibility where no issues. To be sure, the burn boss will appoint a smoke monitor who will periodically travel the highway and determine if visibility is compromised. If it is, then the Colorado State patrol will be notified and appropriate measures taken which could include, a reduction in traffic speed or closure of the highway. Firing would cease at this point. From experience burning in this area, highway visibility problems are unlikely.
4. Electronic signs will be posted on HWY 160 for both East and west bound traffic prior and post ignition.

Element 20: Monitoring

A. Fuels Information (forecast and observed) Required and Procedures
Prescribed fire monitoring is the collection and analysis of repeated observations or measurements to evaluate changes in condition and progress toward meeting a management objective. 10 hour fuel sticks will be placed on the ground and suspended at representative sites within the Burn Area. Sticks will be weighed on each day of burning. One-hour fuel moistures will be calculated from fire weather data.
B. Weather Monitoring Required and Procedures
Weather will be taken at least every hour, occasionally more frequently during burning operations. Temperature, relative humidity, wind speed and direction and sky conditions will be recorded and broadcast over tactical channels for all personnel on the fire. One-hour fuel moisture will be calculated from weather and site data and recorded.
C. Fire Behavior Monitoring Required and Procedures
Fire behavior observations will be made by the Fire Effects Monitor (FEMO). Flame length (FL) and rate of spread (ROS) will be observed and recorded to correspond with weather observations for each fuel type during the day. Other fire behavior observations may include residence time and torching.
D. Monitoring Required to Ensure Prescribed Fire Plan Objectives are Met
Formal and informal post burn monitoring will be conducted according to the District Fuels Monitoring Program. As a minimum, the Burn Boss and Resource Specialists will conduct a field trip of burned units to observe effectiveness of burn and achievement of objectives.
E. Smoke Dispersal Monitoring Required and Procedures
A smoke monitor will observe the height and shape of the column, direction of smoke travel and whether any sensitive receptors are being impacted.

Element 21: Post-burn Activities

Post-Burn Activities that Must be Completed

Each operational shift on a prescribed fire should have an informal After Action Review (AAR).

The Prescribed Fire Burn Boss will insure the Prescribed Fire Post Burn Evaluation is completed

Colorado Department of Public Health, **Form D** – Daily Activity Report must be submitted by 08:00 on the day following the burn. <https://www.colorado.gov/pacific/cdphe/smoke-management-permits>

The Weather/Fuels/Fire Behavior/Smoke Observations (Appendix F) will be collected and placed into the project folder. Any additional Fire Effects Reports will be completed and placed in the project folder.

A post burn evaluation and summary that documents burn day weather, fuel conditions, fire behavior, problems and concerns is required. The report must also indicate if objectives were met and make recommendations for future projects. The prescribed fire results must be compared to the fire treatment objectives and resource objectives that were identified for the project.

Prescribed Fire Name: Vallecito Piedra Integrated Vegetation Management Plan

Ignition Unit Name: VP Unit 1

Prescribed Fire Plan Appendices

Appendix A: Maps: Vicinity, Project or Ignition Units (or both), Optional: Significant or Sensitive Features, Fuels or Fuel Model, Smoke Impact Areas

Appendix B: Technical Reviewer Checklist

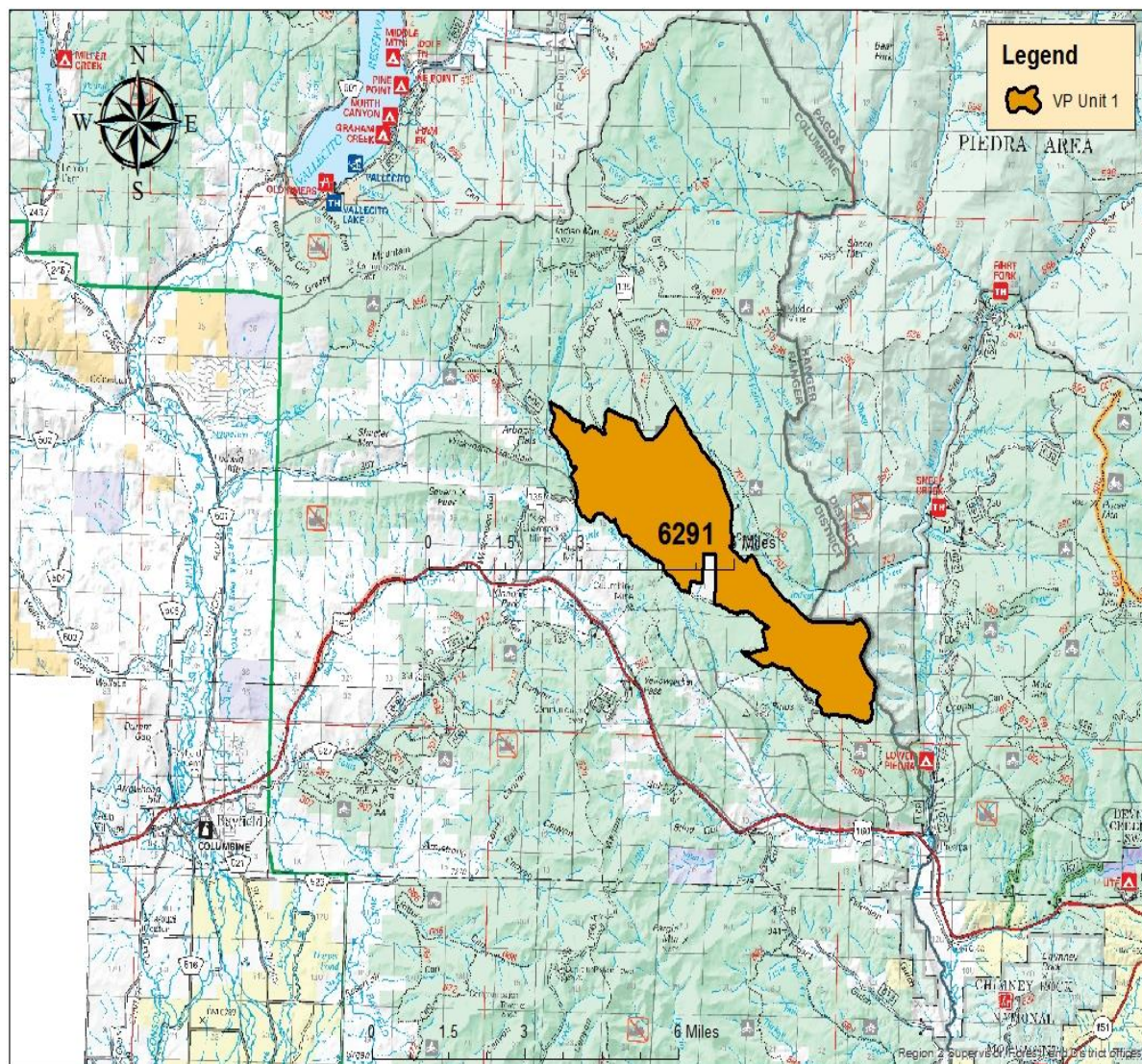
Appendix C: Complexity Analysis

Appendix D: Agency-Specific Job Hazard Analysis or Risk Assessment

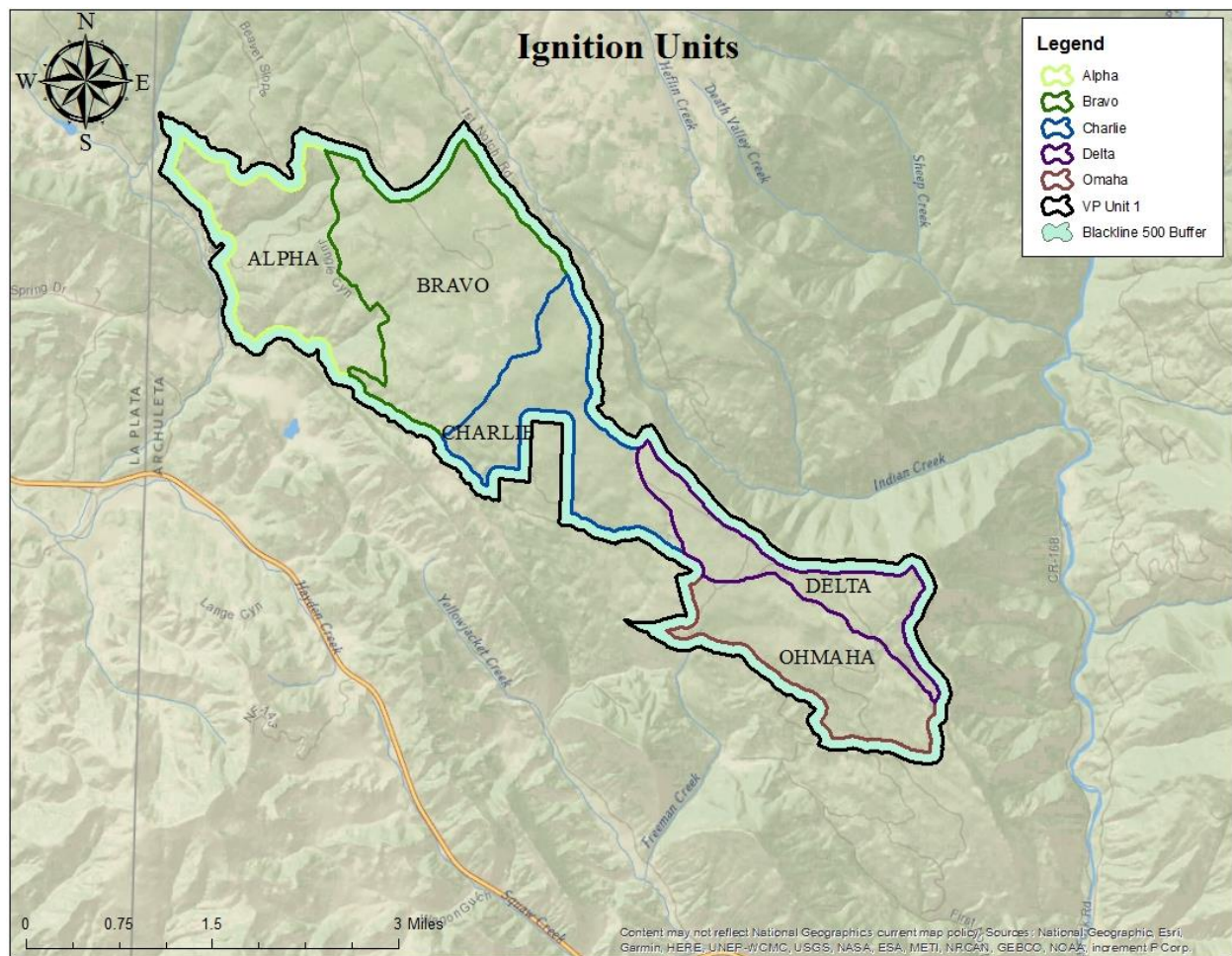
Appendix E: Fire Behavior Modeling Documentation or Empirical Documentation

Appendix F: Smoke Management Plan and Smoke Modeling Documentation (Optional)

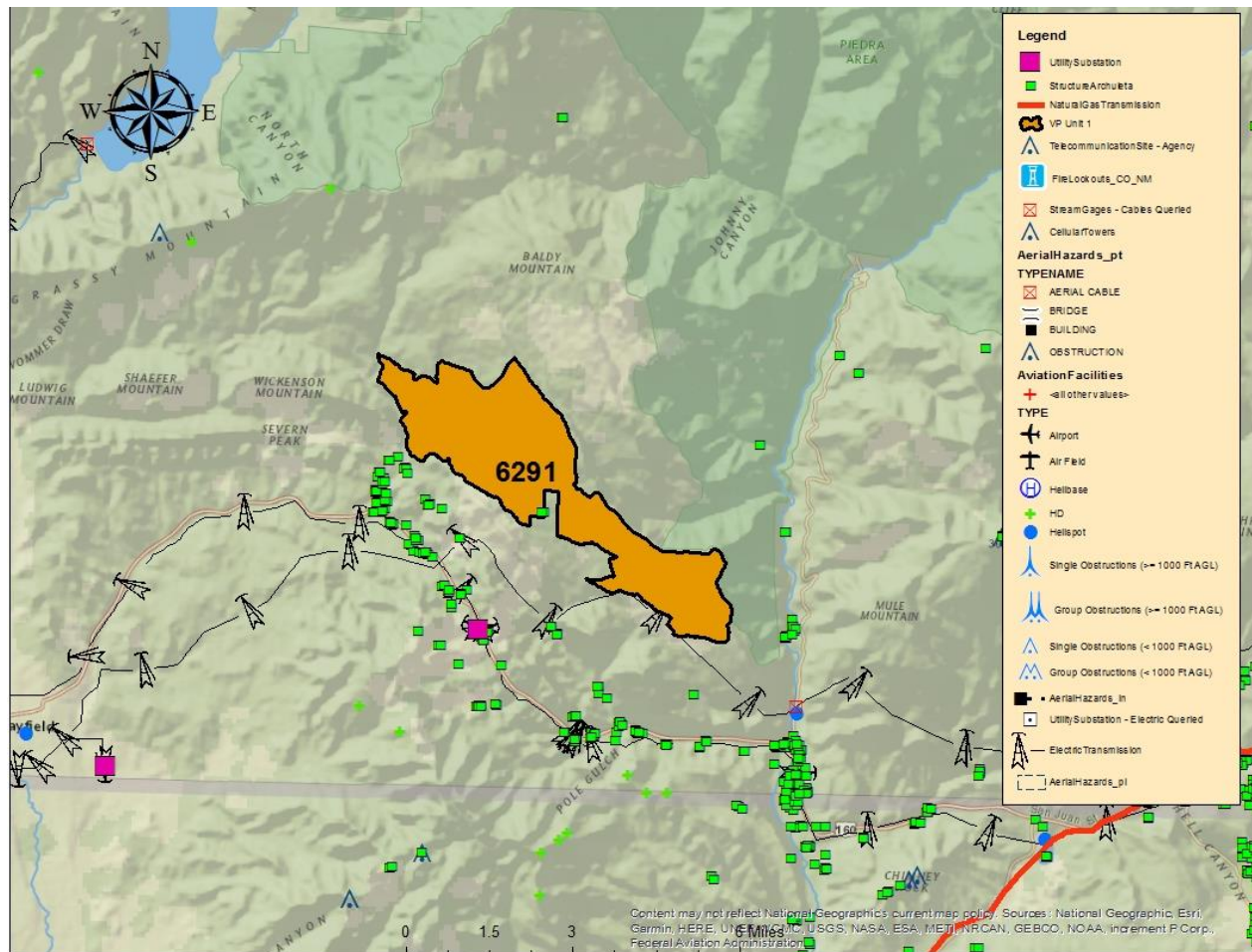
Appendix A: Vicinity Map



Appendix A: Project (Ignition Units) Maps



Appendix A: Values, Significant or Sensitive Features: (Optional) Maps



Appendix B: Technical Reviewer Checklist

Fill out this checklist based on the guidance provided in the Technical Review section in the *Interagency Prescribed Fire Planning and Implementation Procedures Guide*, PMS 484.

Rate each element in the following table with an “S” for Satisfactory or “U” for Unsatisfactory. Use Comment field as needed to support the element rating.

PRESCRIBED FIRE PLAN ELEMENTS	RATING	COMMENTS
1. Signature page	S	
2. A. Agency Administrator Ignition Authorization	S	
2. B. Prescribed Fire GO/NO-GO Checklist	S	
3. Complexity Analysis Summary	S	See comments ref second summary
4. Description of Prescribed Fire Area	S	
5. Objectives	S	
6. Funding	S	
7. Prescription: Prescription Narrative and Prescription Parameters	S	
8. Scheduling	S	
9. Pre-Burn Considerations and Weather	S	
10. Briefing	S	
11. Organization and Equipment	S	
12. Communication	S	See comments ref 2 nd line prod summary
13. Public and Personnel Safety, Medical	S	
14. Test Fire	S	
15. Ignition Plan	S	
16. Holding Plan	S	
17. Contingency Plan	S	
18. Wildfire Declaration	S	
19. Smoke Management and Air Quality	S	
20. Monitoring	S	
21. Post-Burn Activities	S	
Appendix A: Maps	S	
Appendix C: Complexity Analysis	S	
Appendix D: Agency-Specific Job Hazard Analysis or Risk Assessment	S	
Appendix E: Fire Behavior Modeling Documentation or Empirical Documentation	S	
Appendix F: Smoke Management Plan and Smoke Modeling Documentation (Optional)	S	
Other		

☒ **Approval is recommended** subject to the completion of all requirements listed in the comments section, or on the Prescribed Fire Plan.

☐ **Recommendation for approval is not granted.** Prescribed fire plan should be re-submitted for technical review subject to the completion of all requirements listed in the comments section, or on the Prescribed Fire Plan.

Technical Reviewer Signature: /S/ Fred Ellis_____

Qualification and Currency: RXB2_____

Date Signed: 05/05/2022_____

Prescribed Fire Name: Vallecito Piedra Integrated Vegetation Management Plan

Ignition Unit Name: VP Unit 1

Appendix C: Complexity Analysis

Please refer to Element 3: Complexity Analysis Summary in the *Interagency Prescribed Fire Planning and Implementation Procedures Guide*, PMS 484, and the procedures in the *Prescribed Fire Complexity Analysis Rating System Guide*, PMS 424, to fill out this appendix.

Prescribed Fire Name: Vallecito Piedra Integrated Vegetation Management Plan

Ignition Unit Name: VP Unit 1

Appendix D: Agency-Specific Job Hazard Analysis or Risk Assessment

Please refer to your specific agency guidance to fill out this appendix.

Prescribed Fire Name: Vallecito Piedra Integrated Vegetation Management Plan

Ignition Unit Name: VP Unit 1

Appendix E: Fire Behavior Modeling Documentation or Empirical Documentation

Refer to Element 7: Prescription, *in the Interagency Prescribed Fire Planning and Implementation Procedures Guide*, PMS 484, to fill out this appendix.

Prescribed Fire Name: Vallecito Piedra Integrated Vegetation Management Plan

Ignition Unit Name: VP Unit 1

Appendix F: Smoke Management Plan and Smoke Modeling Documentation

(OPTIONAL)

Refer to the *Smoke Management Guide for Prescribed and Wildland Fire* (National Wildfire Coordinating Group, 2001) and Appendix B. Basic Smoke Management Practices in the *Interagency Prescribed Fire Planning and Implementation Procedures Guide*, PMS 484 to fill out this appendix.

The *Prescribed Fire Plan* is developed and maintained by the Fire Use Subcommittee, under the direction of the Fuels Management Committee, an entity of the National Wildfire Coordinating Group (NWCG).

Previous editions: 2014.

While they may still contain current or useful information, previous editions are obsolete. The user of this information is responsible for confirming that they have the most up-to-date version. NWCG is the sole source for the publication.

This publication is available electronically at: <https://www.nwcg.gov/publications/484-1>.

Comments or questions regarding the guide should be directed to the appropriate agency representative on the Fire Use Subcommittee. The roster is available at: <https://www.nwcg.gov/committees/fire-use-subcommittee/roster>.

Publications and training materials produced by NWCG are in the public domain. Use of public domain information, including copying, is permitted. Use of NWCG information within another document is permitted if NWCG information is accurately credited to NWCG. The NWCG logo may not be used except on NWCG authorized information. “National Wildfire Coordinating Group,” “NWCG,” and the NWCG logo are trademarks of NWCG.

The use of trade, firm, or corporation names or trademarks in NWCG products is solely for the information and convenience of the reader and does not constitute endorsement by NWCG or its member agencies or any product or service to the exclusion of others that may be suitable.